Architectural Forum / the magazine of building / April 1958

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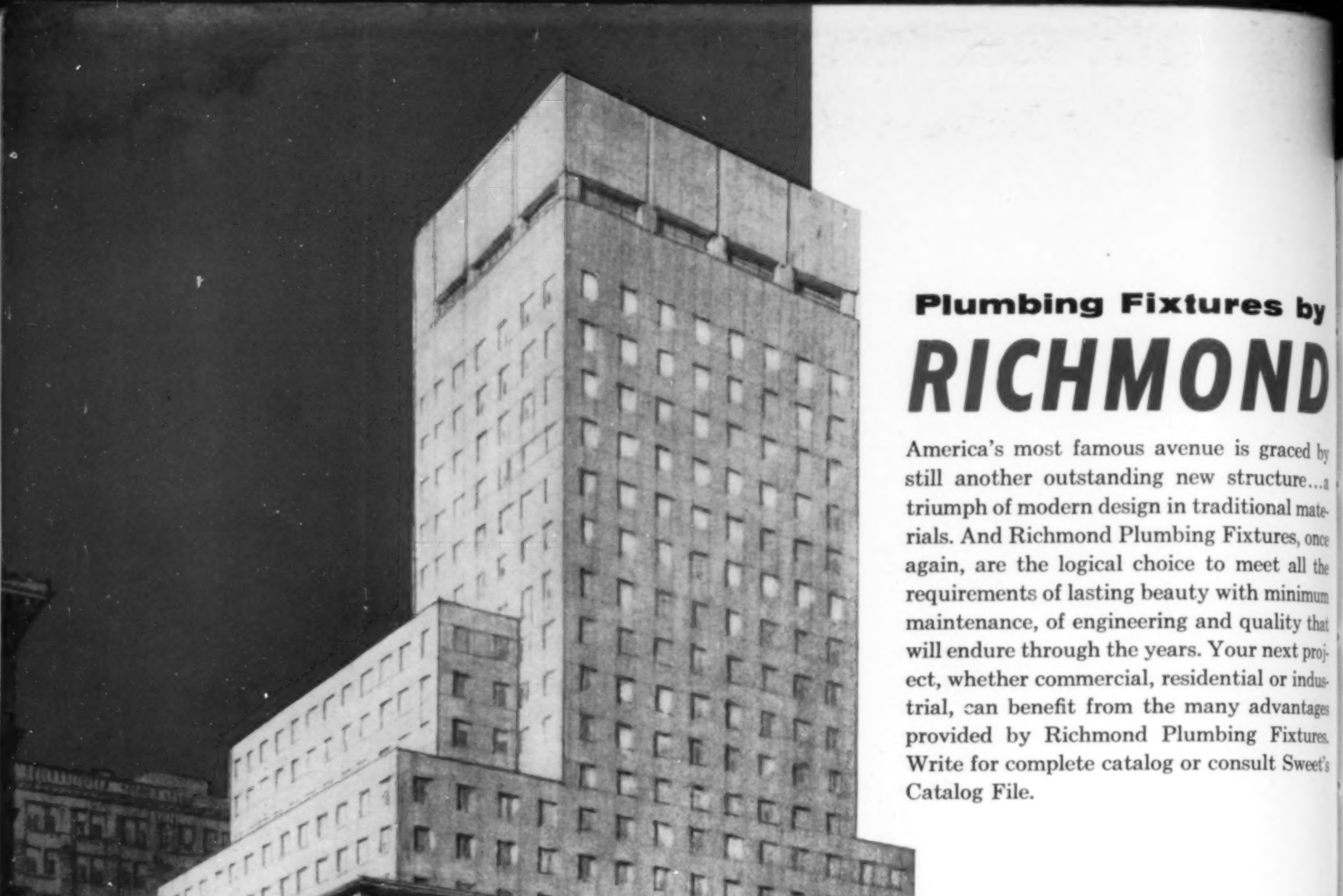

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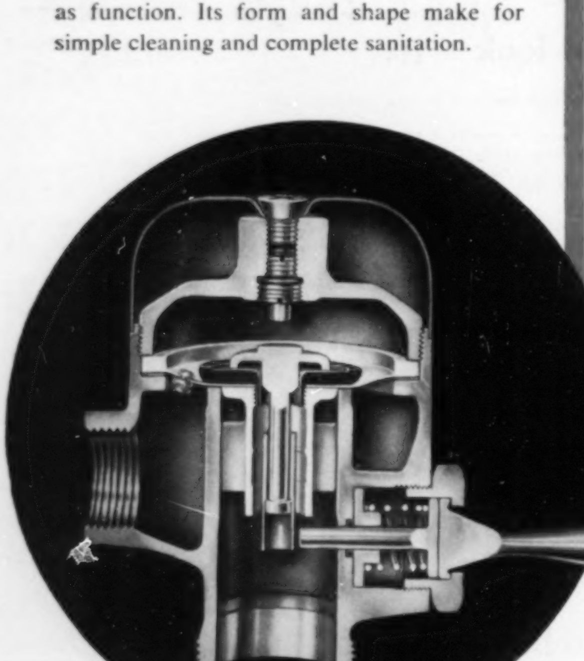

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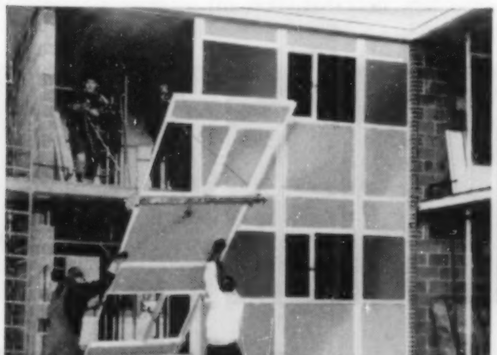

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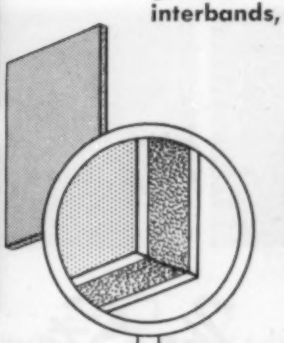

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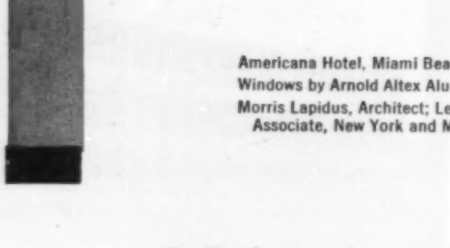

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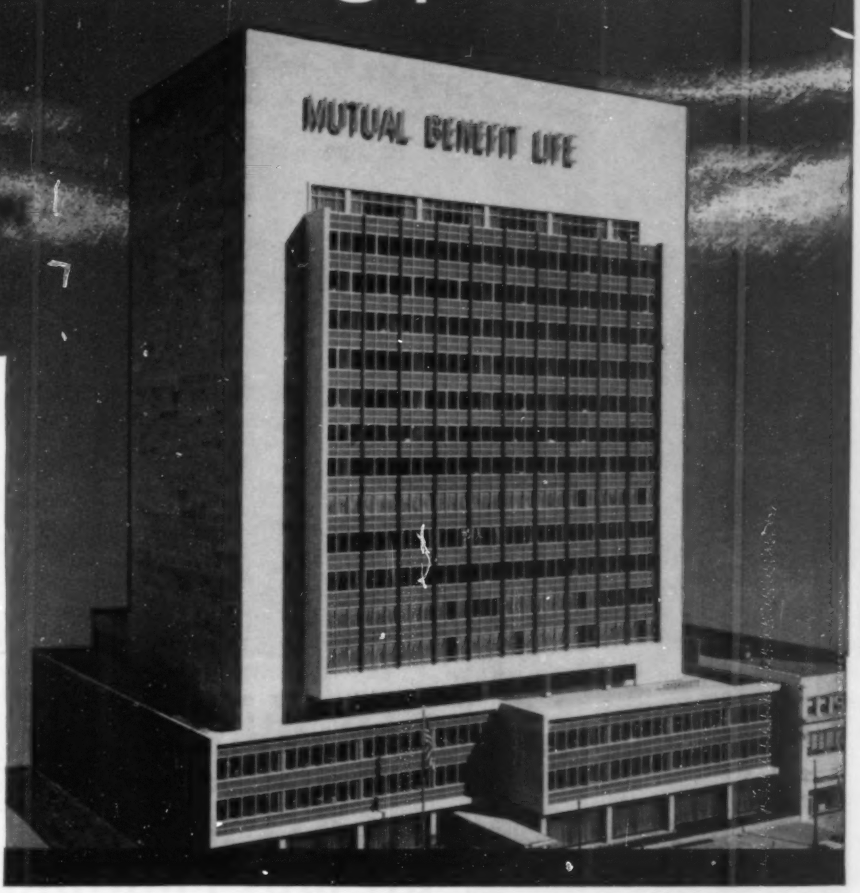

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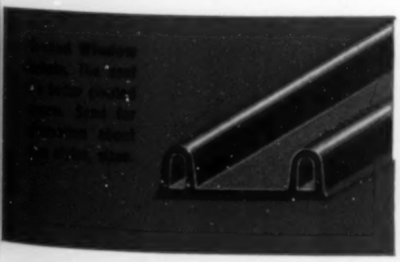
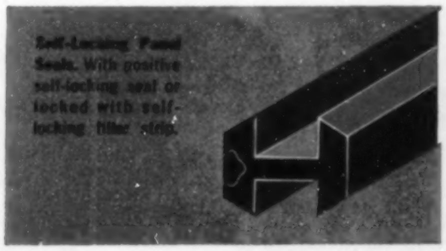

[illegible] Window Seals. [illegible] Send for information about [illegible] sizes.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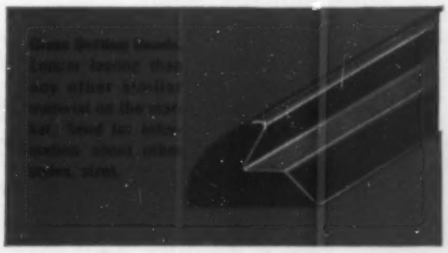
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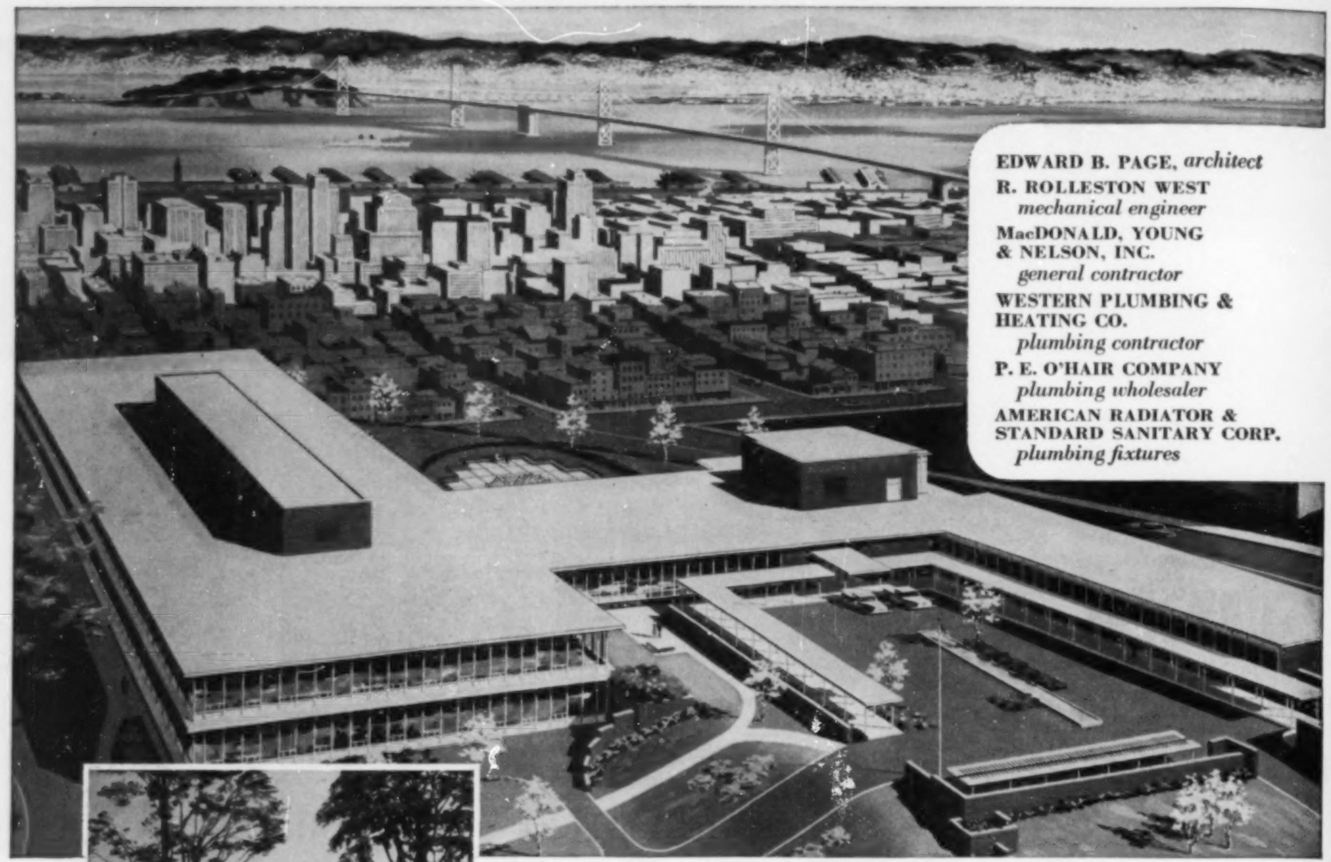

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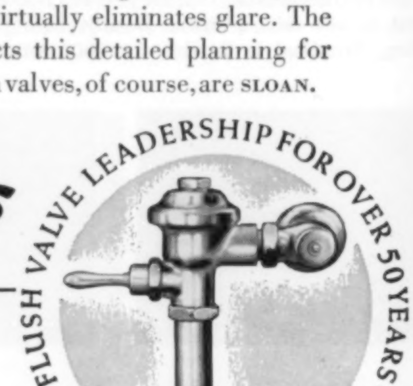


Sparkman housing bill gets green light from Congress; it will add 200,000 housing starts this year.

LIFE: HOWARD SOCHUREK

ALABAMA'S SPARKMAN
"500,000 man-years of employment"

In six short months, housing has shifted from being the main topic in the battle against inflation to the major force for combating the recession. Last month, the Eisenhower Administration introduced its housing bill to Congress. It called for most of the measures outlined in the President's budget message including a six-year urban renewal program, higher FHA mortgage limits, an expanded college housing program, and elimination of discount controls on FHA insured loans. But with one eye on the unemployment figures and the other on November elections, Congress was already moving beyond these Administration proposals and concocting housing legislation of its own.

The bill actually taken up was the one introduced in the Senate last month by Senator John Sparkman (D, Ala.). Sparkman, long the leading Senate Democratic spokesman on housing, wasted no time in putting together a program incorporating some favorite features of his own with some emergency measures to lift home-building volume. Sparkman's bill would:

▶ Give the Federal National Mortgage Association an additional $1 billion for buying insured mortgages on new houses only.

▶ Put another $500 million at the President's disposal to be used for general assistance under Fannie Mae for buying government-insured mortgages.

▶ Extend the VA mortgage guarantee program for two more years (it was to expire in July) with $300 million provided for direct lending to veterans the next two years.

▶ Remove present discount controls on the prices of government-insured mortgages.

▶ Increase the maximum allowable interest rate on Veterans Administration guaranteed mortgages to 4¾ per cent (from 4½ per cent) and set VA mortgage rates at least ½ of 1 per cent below FHA interest rates. The final decision to adjust VA rates would rest with the President.

▶ Reduce the down-payment schedule on FHA-insured single-family home mortgages from 3 per cent of the first $10,000 of value to 3 per cent of the first $13,500 of value.

▶ Raise the interest rates on Title VIII (Capehart Act) housing from 4 per cent to 4½ per cent, at the discretion of the President.

▶ Earmark an additional $50 million for Fannie Mae purchases of Capehart Act mortgages.

Total new money provided by Sparkman's bill comes to $1,850 million, most of it for Fannie Mae. The bill bolted through the Senate Banking Committee in near-record time and the only real debate on the Senate floor was the question of higher VA interest rates. A five-hour debate ensued, climaxed by a Democratic-sponsored proposal to kill the VA rate increase. This resulted in a split vote, 47 to 47, and the same tally came up on a motion to reconsider. At this point, Vice President Richard Nixon cast his tie-breaking vote not to reconsider and so the higher allowable VA rate stands in the Senate version.

The long hassle over the VA rate was largely academic, as rates now are trending downward fast anyway. And the Senate took any onus off itself by leaving rate adjustments in the hands of the President.

When the smoke had cleared from the VA interest rate debate, Sparkman's bill rode through the Senate by a unanimous vote, and cleared the House just as easily, by an unopposed voice vote.

Sparkman himself estimates that his bill will add 200,000 housing starts this year, and "500,000 man-years of employment." Senate Majority Leader Lyndon Johnson (D, Tex.) says the bill will "do no more than restore home building to what it was three years ago"—when a record 1.3 million nonfarm dwelling units were started.

If Sparkman's bill even comes close to restoring home building to 1955 levels, it will stand out as the most important building legislation—and anti-recession legislation to be passed this year. But many builders and lenders have already expressed their doubts that anything like 200,000 extra starts will result from the Sparkman measure. Most believe it will certainly spur some new building, however, and at least one large lending institution is standing by to get in on the ground floor when the new bill becomes law. The Chase Man-

continued on p. 8

hattan Bank announced, following Senate passage of the Sparkman bill, that it was ready to purchase $100 million of government insured mortgages. The bank pointedly stated that its action was contingent on the Sparkman bill becoming law.

WASHINGTON

"Save the Capitol" movement grows

"Sam Rayburn has been a member of the House of Representatives for 45 years and as Speaker is one of the most respected and powerful men in the United States Government. But he doesn't own the Capitol."

Thus did the *New York Times* begin, one of its March editorials opposing the controversial proposal, espoused most heartily by Rayburn, to push out the historic East Front of the U.S. Capitol 32½ feet. The *Times* was just one voice, though a powerful one, in the growing chorus of opposition to the proposed defacement of the Capitol. As developments unfolded last month, it became obvious that the *Times* characterization of Rayburn was extremely perceptive: the 76-year-old Speaker was not only pushing his pet project harder than ever, but he was doing so in the face of rising opposition to the project among his own colleagues on Capitol Hill.

In the same week that the first public hearings ever held on the project were revealing the extent of the opposition from professional architects and historical societies, Rayburn hastily called a meeting of the full Commission for Extension of the Capitol. Besides himself, this commission consists of: Vice President Richard Nixon, House Minority Leader Joseph Martin (R, Mass.), Senate Minority Leader William Knowland (R, Calif.), and Architect of the Capitol J. George Stewart. At this meeting Stewart was authorized to let contracts for the East Front extension. In keeping with the secrecy that has shrouded all proceedings connected with their effort to deface this most public of all public buildings, the Commission's vote was not announced. But it was believed that only Representative Martin voted against going ahead, even though Knowland and Nixon had both previously been reported as against the project.

Technically, this would seem to give Rayburn and Stewart—who is not an architect despite his title as Architect of the Capitol—a green light to push ahead with extension of the East Front. But strong opposition is building in the Senate as a result of the hearing, at which the Senators heard the proposal to extend blasted not only on aesthetic and historic grounds, but on practical grounds as well. It was pointed out that the "thin sliver of space sandwiched between stone" that would result from the extension would not do any of the things that Congress wanted done in its expansion plans, and would in fact be almost prohibitively expensive. Although Stewart claims the project will cost only $10 million, building experts with more experience say it will cost closer to $25 million.

One outgrowth of the hearing was a unanimous vote by the Senate Public Works Committee in favor of a bill introduced by Senator H. Alexander Smith (R, N.J.) to stop the East Front scheme until alternative proposals have been considered. Even this vote of firm opposition by a group of his Congressional colleagues did not deter Sam Rayburn, however: he continued to act as though he did own the Capitol by saying that the Senate Committee vote left the project "right where it is."

LIFE: EDWARD CLARK

SPEAKER RAYBURN
"He doesn't own the Capitol"

Ironically, the Senate missed a chance to postpone the East Front extension. It might have done so by resorting to the same parliamentary device used to put over the project originally. Two years ago, the East Front scheme was tagged to the tail of a last-minute supplementary appropriations bill. This is a favorite method of sneaking through legislation without public hearings or the chance of appraisal by other Congressmen. Last month, two Virginia Democrats, Senators Byrd and Robertson, tried to insert into a supplementary appropriations bill a clause that would have forced consideration of other plans for enlarging the Capitol.

But the Byrd-Robertson clause was defeated on the grounds that it was really legislation riding on the coat tails of an appropriation measure—something that evidently had not occurred to the Senate two years ago when it approved the East Front extension in the first place.

Even though the Commission for Extension of the Capitol has voted to proceed, it is not likely that it will be able to ignore the mounting storm of popular opposition to the project, no matter how dictatorial Rayburn may get. By the Ides of March, it was rumored that Senator Knowland wanted to hold up on the East Front project until the full Senate had a chance to vote on the Smith bill. And there was an excellent chance that the Smith bill would pass the Senate—even the hastily contrived Byrd-Robertson clause had the support of a majority of the Senators voting, although it failed to get the necessary two-thirds approval.

Potomac bridge gets a green light

The controversial extension of the East Front of the U.S. Capitol is not the only project that some members of Congress have plowed ahead with despite the determined opposition of architects and planners. Last month in Washington an eight-year hassle over a proposed Potomac River bridge was drawing to its conclusion.

Washington's need for another trans-Potomac link has long been recognized. Architects and planners do not dispute this need, but they have argued vigorously that the proposed placement of the bridge would despoil valuable park areas. The new bridge would start at the foot of Constitution Avenue, near the Lincoln Memorial, and an adequate approach system would destroy much of the green area to the northwest of the Memorial. Because of this the National Parks Service itself has opposed the bridge in favor of a tunnel.

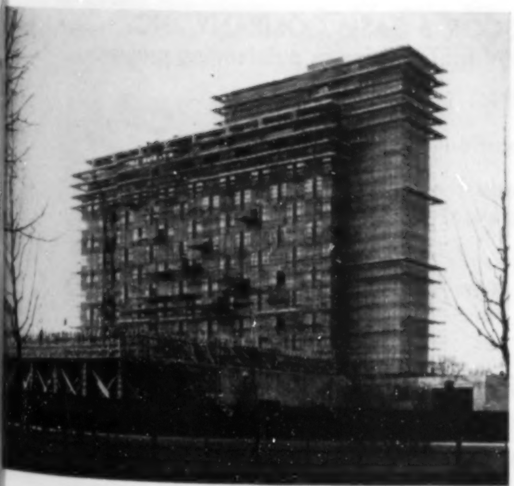
The Committee on the National Capital of the American Institute of Architects, the District Fine Arts Commission, and the American Planning &

Civic Association have also opposed the bridge, arguing either for a tunnel or a bridge placed farther up-river, crossing Theodore Roosevelt Island. The present site is only about 1,200 feet from the present Memorial Bridge.

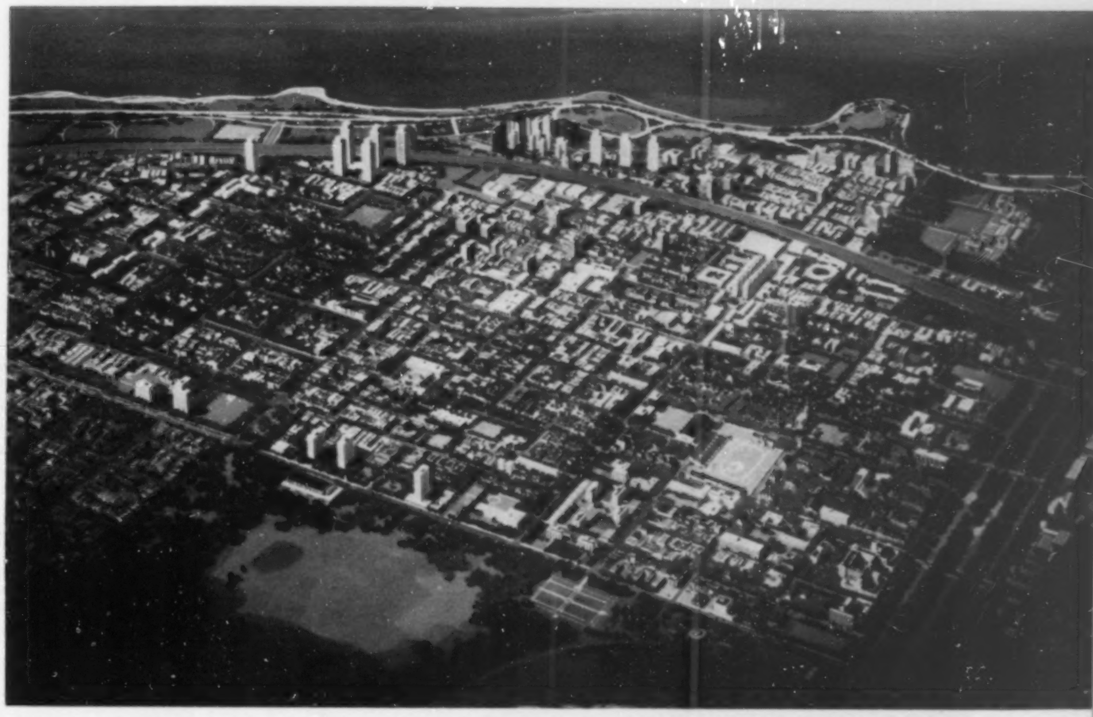
Congress approved construction of the bridge in 1954, and has already appropriated $3.5 million of the estimated $24.5 million that the bridge will cost. But the cries of the opposition have spurred a few Congressmen to fight the bridge, and in recent months bills have been introduced calling for a tunnel rather than a bridge.

Caught in the middle in this scrap between Capitol Hill tunnel and bridge advocates, the District Commissioners and the Department of Interior have for months shifted uneasily. At first, the District Commission said it was convinced it had all the Congressional authority it needed, and would not wait any longer to start construction on the bridge. Then the commissioners reversed themselves, decided that they could not proceed until the intent of Congress was clearly in favor of a bridge. In other words, they wanted assurance that tunnel proposals would not be enacted.

Last month, a special meeting of the House District Committee ordered the District Commissioners to proceed with the bridge, and the Department of the Interior said it would start studies with the District Engineer to determine the best placement of approaches so as to retain as much green space around Lincoln Memorial as possible.



NEW HILTON HOTEL FOR WEST BERLIN. On the site of West Berlin's old zoological gardens, the eighth and latest hotel of Hilton Hotels International is now nearing completion. Just a mile from Brandenburg Gate, the $3.5 million, 350-room hotel was designed by Pereira and Luckman, with the German firm of Schwebes & Schoszberger as associates.



CHICAGO'S HUGE HYDE PARK-KENWOOD redevelopment project is shown above, in the model prepared by the University of Chicago and Webb & Knapp, which will build part of the project. In the upper part of the picture, near the lakefront, W & K Architect I. M. Pei has designed both high-rise and row apartments, as well as a large shopping center.

A big urban renewal project is approved by Chicago's conservation board

Chicago's most ambitious renewal project cleared its first hurdle a few weeks ago when the Community Conservation Board approved plans drawn up by the University of Chicago for development of the Hyde Park-Kenwood urban renewal site on the South Side. But before the plan can be put into execution it must still be approved by the Conservation Community Council, the federal Urban Renewal Administration, and the City Council.

The plan calls for a $36 million expenditure of public funds, about $29 million of which will be federal money. The rest will be paid by city and other local agencies, mostly in the form of street improvements and schools. The Community Conservation Board hopes that an additional $60 to $70 million will be spent by private interests for rehabilitation and construction of residential and commercial buildings in the 900-acre site. Rehabilitation is being heavily counted on to make Hyde Park–Kenwood a success; about 80 per cent of the total area is scheduled for rehabilitation while only 20 per cent will be razed and rebuilt. It is expected that when the five-year renewal of the area is completed, annual tax revenues will rise more than $1 million. due to higher valuations of improved properties.

William Zeckendorf's Webb & Knapp Construction Co. will start work this Spring on its 38-acre residential site within Hyde Park–Kenwood. W & K plans to build about 800 units, in high-rise and row house apartments, as well as a shopping center, theater, hotel, and restaurant. The total project is expected to cost about $15 million.

The University of Chicago has a major stake in Hyde Park-Kenwood, as its campus juts into the south end of the project. The university, operating under a $100,000 Field Foundation grant, has been drawing up plans for redevelopment of the blighted areas surrounding it for five years, and has a major voice in determining how the area is to be remade.

Although the bulk of the area will be residential, seven institutions—churches, a hospital and a home for the aged, YMCA and others—are planning to use land within the project area. Most of this will be used for play-

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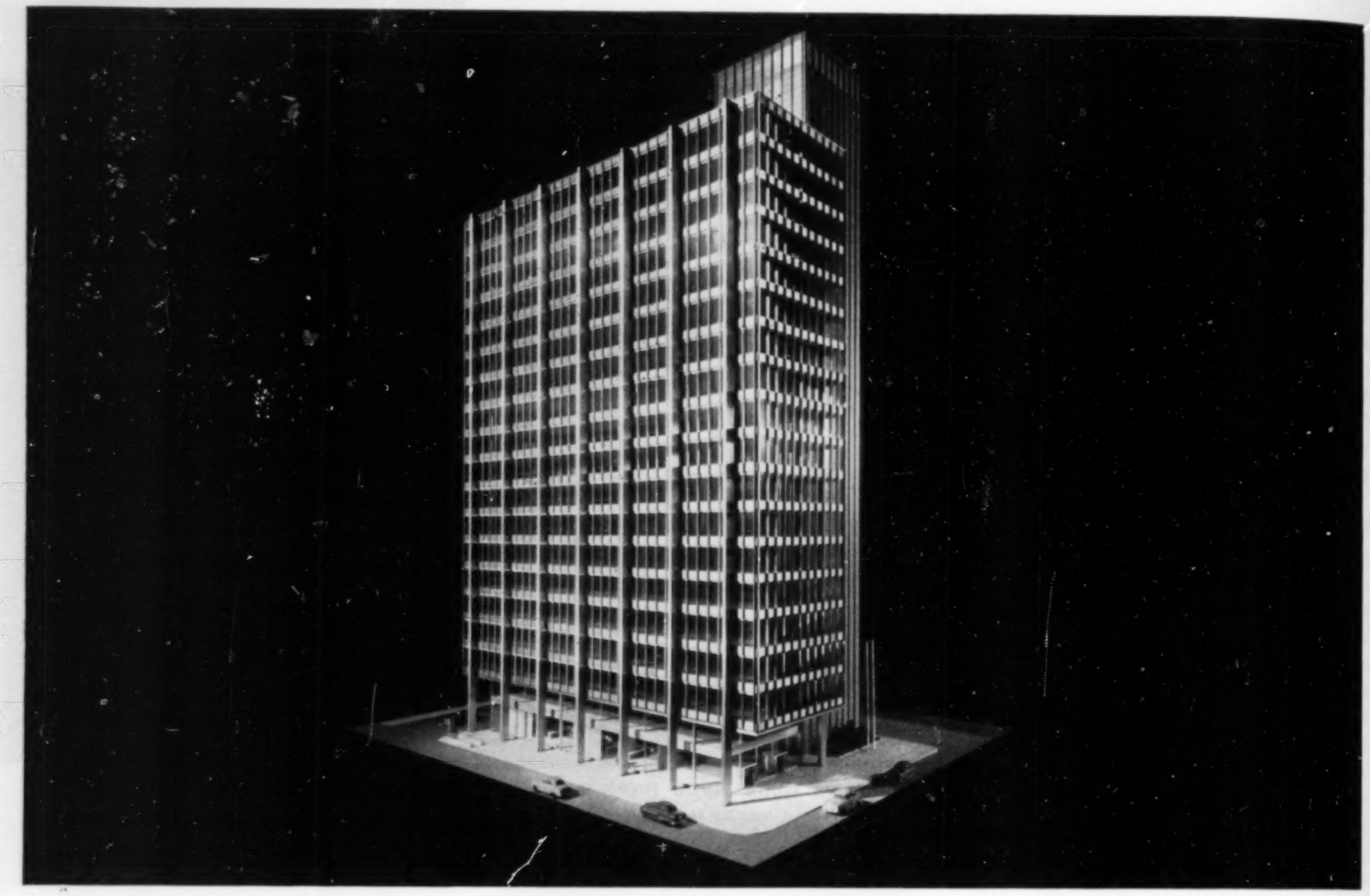

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ground and other recreational areas, but there will also be some new building of institutional facilities.

LABOR

NLRB orders unions to kill closed shop

For organized labor in the construction industry, 1958 is already shaping up as a historic year. Early in the year, there was the significant agreement between the Building Trades Department of the AFL-CIO and the National Constructors Association to end featherbedding and other wasteful labor practices in heavy construction (FORUM, March 1958). At the same time, the AFL-CIO took a major step toward making permanent peace in the long jurisdictional struggle between craft unions and industrial unions.

Last month, another vital labor issue was met. The National Labor Relations Board warned the Building Trades Department, the Associated General Contractors, and the National Constructors Association to end closed shop practices voluntarily or face legal consequences. And such consequences could be stiff—the letter from NLRB said that if its order is not complied with by June 1, the board would consider penalizing both labor and management under penalties established in the old Brown-Olds case. That decision required the union to pay back to members all dues and assessments collected under closed shop conditions. And a subsequent decision forced the employer to share some of the burden of such reimbursement.

For most building unions, such penalties would be stiff indeed. Even though the Taft-Hartley Act has outlawed closed shops since 1947, federal enforcement agencies since then have winked at closed shops in building unions. The justification for this was that construction was so seasonal, subject to such fluctuations, that it would be impracticable to crack down on the closed shop. In fact, the closed shop is such a fixture in building that many local builders depend on the union to do their hiring for them, much the way the shipping industry simply tells the unions how many men to send to a pier.

Thus, the NLRB order could hurt some builders as much as the union, but in fact it probably will not hurt either. Even though closed shop clauses in contracts will have to be eliminated, most unions will simply insist on a union shop, which would require workers to join the union within 30 days after taking a job. Even in the 18 states that presently bar union shops, the effect will probably be the same, because the threat of a strike will be too strong, particularly in the peak building season, to allow any builder to hire nonunion labor. The law does not bar a walkout in protest against the hiring of nonunion labor.

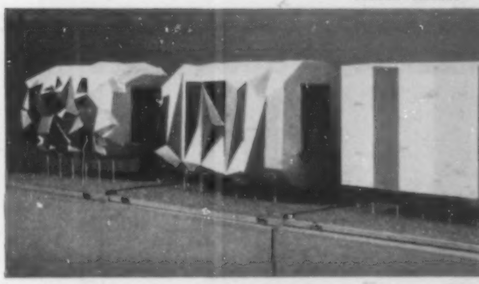
CLEVELAND'S NEW SKYSCRAPER Cleveland, which has not participated very much in the postwar skyscraper boom, has recently acquired a sparkling new 25-story aluminum and glass sheathed tower. The Cleveland Illuminating Co. Building, designed by Carson & Lundin, was opened about six weeks ago, when the first tenants moved into the $15 million structure.

METROPOLITAN PROBLEMS

Seattle kills metropolitan government

Dog leashes won and metropolitan government lost in Seattle last month. City and suburban voters went to the polls to determine whether they would set up a metropolitan municipal corporation to handle sewage, public transit, and comprehensive planning for the Seattle metropolitan area. Although more city votes were cast for the proposal than against it, the proposal failed to get a majority of the suburban votes, and, under the terms of the referendum, the proposal was killed. At the same time, voters also turned down a $2 million bond issue for advance land acquisitions—a sort of land bank, a $3 million issue for expansion of parks and playgrounds, and a 1-mill tax increase to pay for the metropolitan corporation. About the only thing Seattle voters accepted was the proposal that all local dogs be kept on leashes. More votes were cast on the dog leash issue than on any other proposal.

LESTER KRAUSS



A CANDID U.S. EXHIBIT FOR BRUSSELS. U.S. progress on three vital problems of democracy—segregation, the city and urban sprawl, and control of our natural environment—is symbolized by the exterior design of these three small buildings at the Brussels Fair. Designed by FORTUNE's art director, Leo Lionni, and containing an exhibit by the magazine's staff, the first building, a jumble in shape and color, states the chaos of the problems. The second, calmer and more organized, houses an exhibit showing progress already made towards a solution, and the third, simple and serene, represents the attainable goals.

Seattle's metropolitan government proposal was considered by many experts the best devised to date because it confined itself to the three biggest problems of the area. It called for a 15-man council, with seven members plus Seattle's mayor representing the city, and the other members being either suburban or county officials. Despite the merits of the plan, suburbanites voted 27,000 to 21,000 against it. This was enough to nullify the city vote of 80,000 to 53,500 in favor because both city and suburbs had to show a majority in favor of the proposal.

Seattle's Mayor Gordon Clinton is not giving up on metropolitan government, however. He called a meeting of mayors from suburban towns to try to design another metropolitan government proposal that might have a better chance at a future election.

Clinton believes metropolitan government is the best answer to Seattle's three crushing problems: 1) auto traffic is strangling the city because there is no adequate public mass rapid transit; 2) there is no area-wide planning, but rather a plethora of planning commissions, which frequently work at

continued on p. 13

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cross purposes to each other; 3) most pressing of all, every day that passes sees Seattle's sewage problem get worse. An estimated 70 million gallons of raw sewage a day is dumped into Puget Sound, and sewage and treatment plant wastes also flow into Lake Washington. As a result, beaches on the Sound have been closed, and the lake is clogged with slimy green algae which are referred to locally as "the green menace."

Seattle is not the only city where the idea of metropolitan government has taken a licking recently. In Dade County, Florida, where voters last May approved a much broader metropolitan area scheme than Seattle's, the metropolitan government machinery shuddered to a halt soon after it got under way. Smaller towns around Miami have forced a referendum vote to curb the metropolitan commission's powers. The vote was originally scheduled for February 11, but was put off so that the courts could rule on the constitutionality of the proposed amendment to the County charter that would, in effect, let any of Dade County's 26 towns veto any act of the metropolitan government. Local officials have been particularly jealous of their police and zoning powers, and the move is calculated to emasculate the metropolitan government system before it can even function.

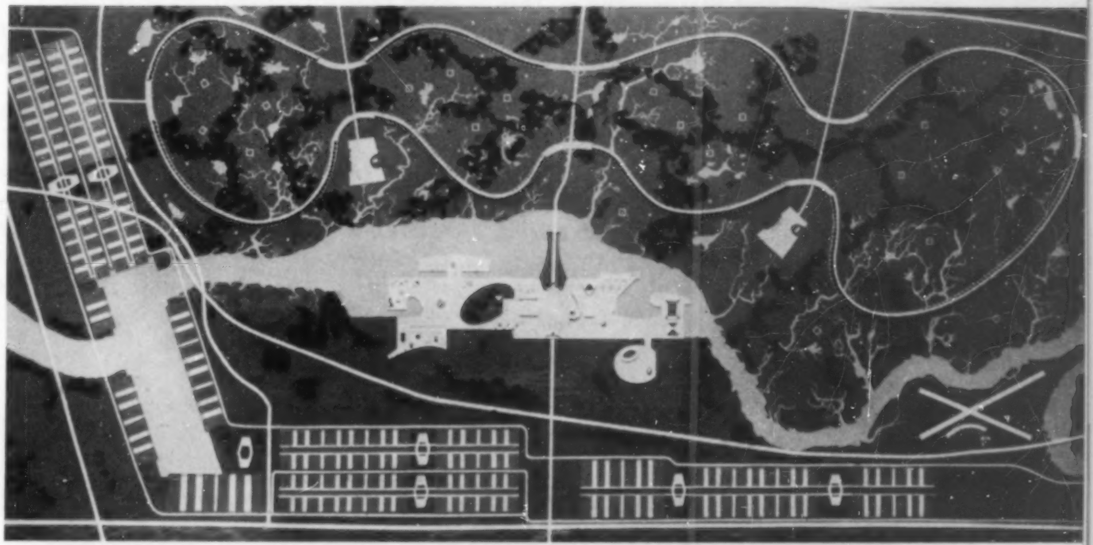
REAL ESTATE

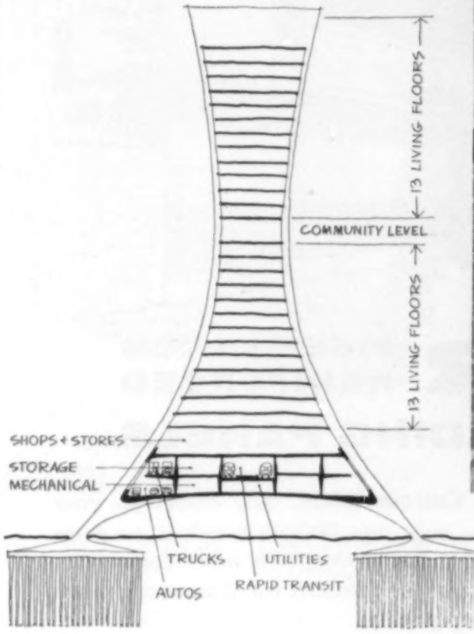
Realtor offers renters "escalator" leases

Real estate and construction optimism were personified last month by Arthur Collins and Wylie F. L. Tuttle Jr., of New York's Collins Tuttle organization, rental agents for many of the largest new office buildings in New York and several other cities. Tuttle outlined the terms he had offered to a prospective tenant, a building material supplier, for the last floor available in the new Borg-Warner Building in Chicago (FORUM, March 1957).

According to Tuttle, the cautious client wanted to wait until June before signing a lease, to see how housing starts would shape up this year, and also expressed some concern about the long-term economic outlook. To counter this, Tuttle, whose company is a co-owner of the Borg-Warner Building, offered the prospective renter a contract that specifies: 1) if housing

continued on p. 14





FOR THE JERSEY MEADOWS, A SERPENTINE BAND OF HOUSING

The strange-looking buildings and site plans shown in the pictures above are the latest attempt at solving the perplexing problem of the Jersey Meadows.

For decades, the 33,000 acres of swampland called the Jersey Meadows have been a puzzle and frustration to planners in New Jersey and New York. State and local government officials have long chafed over the waste of so much open land so near to the most densely populated area in the U.S. In the late 1920s, a vast study was made by the State of New Jersey of ways to reclaim the Meadows, but the depression killed the project.

Recently, 32 seniors at the Pratt Institute School of Architecture in Brooklyn, N. Y. tackled the puzzle and came up with some interesting suggestions. Five plans were submitted in a competition that was judged by a seven-man panel of architects, legislators, and architectural editors. The plans and models were made under the guidance of Paul Nelson, professor of architecture at Pratt, and Olindo Grossi, dean of Pratt's School of Architecture.

The plan that won the competition is shown above. It is the work of John Mesick, Gary Allen, Robert Barton, Alan Henschel, Albert Pfeiffer and Lewis Zurlo. Its most striking feature is the 16-mile-long serpentine band of highways, public transit (via monorail), and housing that surrounds a park area. Streets, pedestrian walkways, public utility lines and the monorail take up the lower floors of the band, which stands on concrete piers set 200 feet apart. Above the lower levels are 26 floors of apartments.

The striped areas to the left and below the band are industrial areas, and in the center is a vast community civic center with stadium, theaters, and other facilities for active and passive recreation.

starts for the first five months of this year do not exceed starts for the comparable period last year, Collins Tuttle will allow the renter to withdraw from the deal on June 15 without any liability, 2) if per capita national income declines from its 1957 level this year or during the life of the proposed 20-year lease, Collins Tuttle will revise its base rent downward by the same percentage that national income declines—up to $1 per square foot. But, over the full 20-year lease period, Collins Tuttle will also revise base rents upward—up to $1 per square foot—as per capita national income rises.

A few weeks ago, the prospective renter took the space on the "escalator" terms. So far, there have been no other takers for such terms, although Collins Tuttle says it is ready to offer "escalator" terms to prospective renters in any of the new New York office buildings for which it is agent.

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URBAN RENEWAL

Housing officials discuss renewal

Developers, planners, and municipal officials headed for East Lansing, Michigan, a few weeks ago, when the National Association of Housing & Redevelopment Officials held its third annual urban renewal workshop. The main theme of the workshop was "the economics of urban renewal."

One of the most interesting sessions in the three-day meeting was a panel discussion in which William L. Frederick, assistant director of the Council of State Governments, explained some of the proposals—which he helped draft—that led to President Eisenhower's recommendation for shifting some of the federal responsibility for urban renewal to the states. This proposal which was enunciated in the President's budget message and is now part of the Administration's housing bill (page 7), calls for the states to assume at least one-sixth of the cost (now borne entirely by the federal and municipal governments) of selling cleared land at lower prices than it was originally bought. But Frederick's arguments in favor of more state aid were questioned sharply by other panelists and the audience of professionals, largely on the grounds that few states had shown any interest in renewal so far, and there is as yet no reason to expect they will put up the needed funds by the time federal funds are cut back in 1962.

The vital question of urban renewal's attractiveness as an investment was another panel topic, and James H. Scheuer, a leading redeveloper, cited present federal renewal laws as "pretty good investment" instruments. But, he added, they would not spark any interest on the part of builders who want to recover their working capital upon completion of the project. For urban renewal to survive, Scheuer added, legislation will have to be enacted that will make the program attractive to builders as well as investors because, he said, the investors such as himself, will be running out of funds soon.

W. Beverley Mason, FHA's Special Assistant for Urban Renewal, disputed Scheuer's argument, said that the problem was not so much that more builders were needed as it was that more land for urban renewal is needed.

New Haven's Slum Clearance Direc-

continued on page 16

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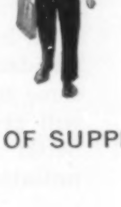

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YOUR SINGLE SOURCE OF SUPPLY FOR DOORS • WINDOWS • BUILDING PANELS • CURTAIN WALLS tor, H. Ralph Taylor, made a plea for quality control in urban renewal. Taylor maintained that while competitive bidding was the easiest way to sell renewal land, it was not the best way to get good architectural design.

In negotiated bidding for renewal land, Taylor says, it is possible "to wed price and quality design," although even with this procedure quality is not always achieved. Even with competitive bidding, Taylor believes it is possible to get a high standard of design by making it known that design quality as well as price will be considered. FHA officials at the meeting argued against the imposition of too much architectural control by the local agencies, on the grounds that it could scare off potential redevelopers. But it was quickly pointed out that FHA officials themselves, in enforcing minimum property requirements, frequently impress architectural controls.

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ARCHITECTURE

Architects and clergymen criticize church design

Church building in America has become an $868 million annual business. But are American architects today designing significant churches?

The answer of the recent 18th annual National Conference on Church Architecture seemed to be a qualified "no." More than 850 architects and clergymen, representing two major sponsoring groups, the Church Architectural Guild of America and the National Council of Churches, gathered in Detroit, Michigan, were generally critical of contemporary church design. There was some feeling that churches being built today are an improvement over most of those of earlier years, that they are more than "mere shelters for devotion" and more adequately reflect "what their congregations believe." But most of the comment was critical, and the criticism was sharpest in the voting of juries on 100 exhibits of church designs.

In the important competition of the Church Architectural Guild for churches seating over 300 persons, the jurors were toughest of all, and their comments comprise a hard indictment of present-day church design. The jury made no major awards, and gave only one honorable mention (to the Parkland Presbyterian Church of Flint, Michigan). The jury said: "A few projects of effective and consistent architectural character were found to be defective in proportioning and arrangement of functional facilities and seemed to show lack of understanding of how these facilities would be used."

Individual members of the jury, which consisted of four architects and two clergymen, made these comments about the buildings they judged:

▶ "Evidence of lack of understanding of tradition and meaning of architecture and understanding of the contemporary."

▶ "No original thought—just a rehash and reassembling of old and new idioms."

▶ "The exhibits lacked simplicity and tended to confuse designs of various kinds, none actually meriting an award. It is hoped that in the future higher standards will be met and probably some more of the outstanding architects will present plans for exhibit so that better examples will be set forth for imitation, if you please." END

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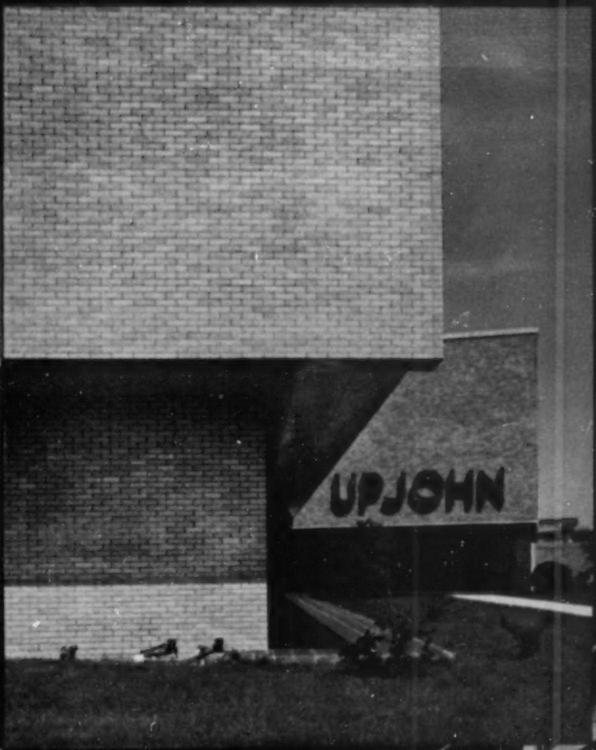
Model by Pratt Institute students
Stuart Cohen, Stanley Kogan, Frank Marcellino

Pembroke Chapel, Detroit, Michigan.
Architect: Earl L. Confer

▼ Carrolton Apartments, Baltimore, Maryland.
Architect: Joseph H. Fontz. Consultant: Henry P. Hopkins



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And most important, the Lennox Comfort Curtain system actually does a *far better* job than costlier systems used previously. It provides a full, even flow of air throughout its entire length along the exposed classroom wall. It is amazingly quiet. And it holds room temperatures to a variance of six-tenths of one degree, circulates air continuously for perfect distribution, introduces a continuous supply of fresh air during the daytime heating cycle, and provides *tons* of needed cooling without the cost of refrigeration.

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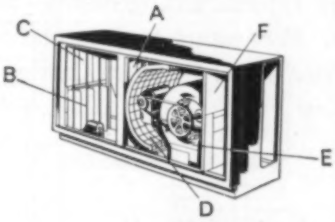

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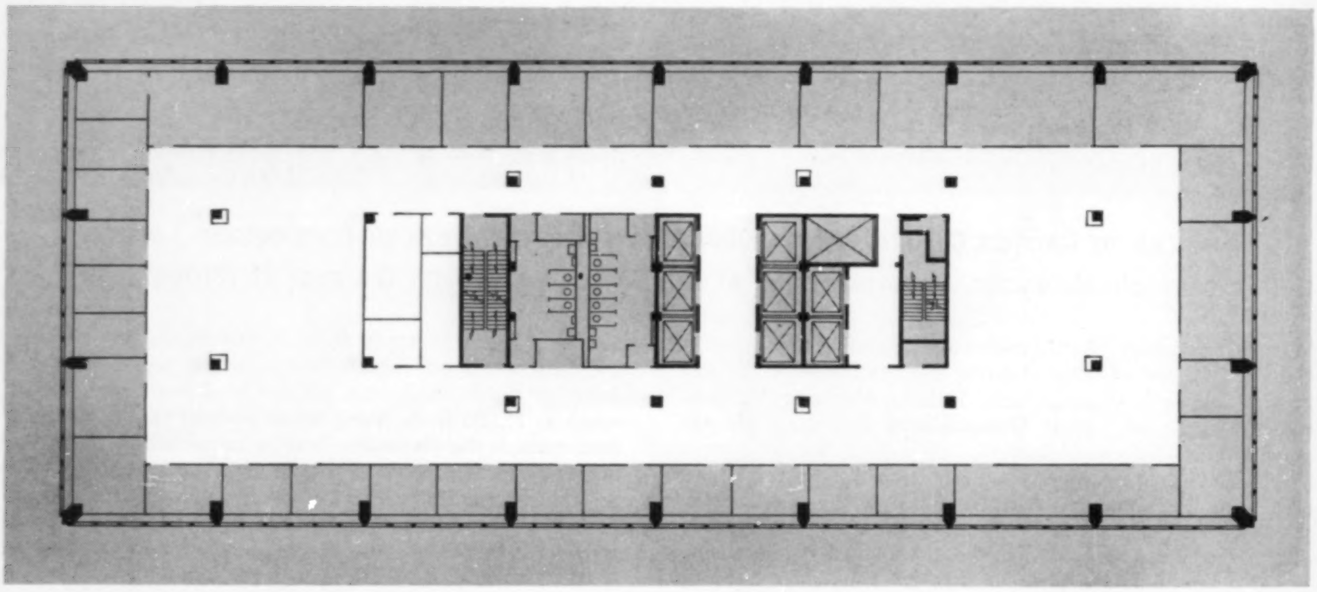

That depends on the amount of heat generated within the interior areas. In most Class A office buildings this heat load is increasing. It is moving up year after year because of the greater use of electronic office equipment and more intense lighting.

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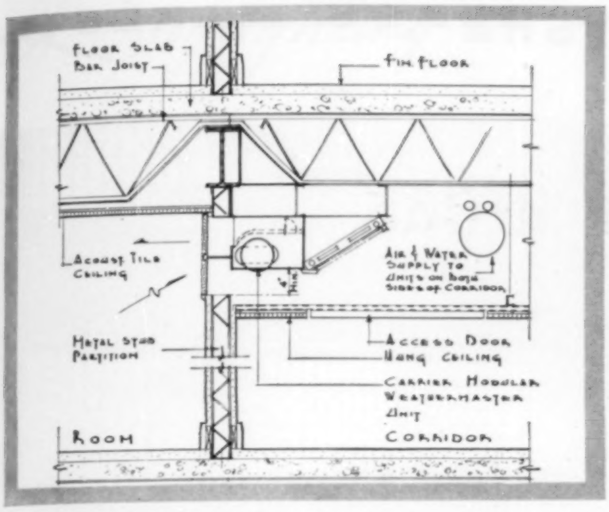
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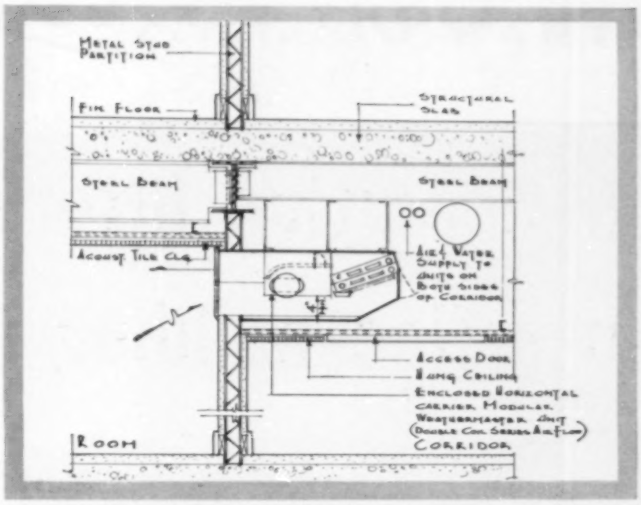
METAL STUD PARTITION
FIN. FLOOR
STRUCTURAL SLAB
STEEL BEAM
STEEL BEAM
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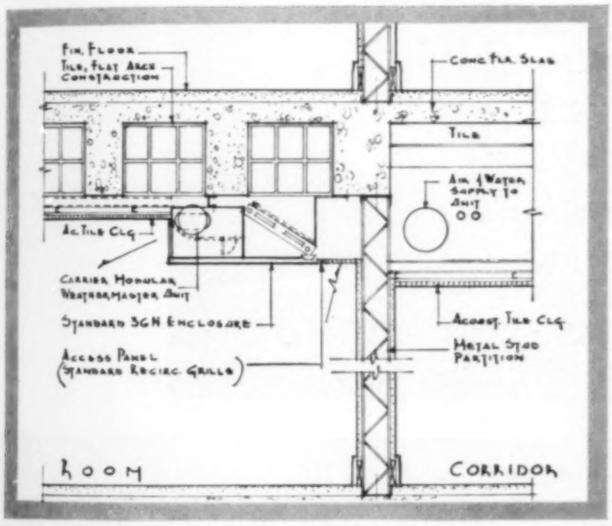
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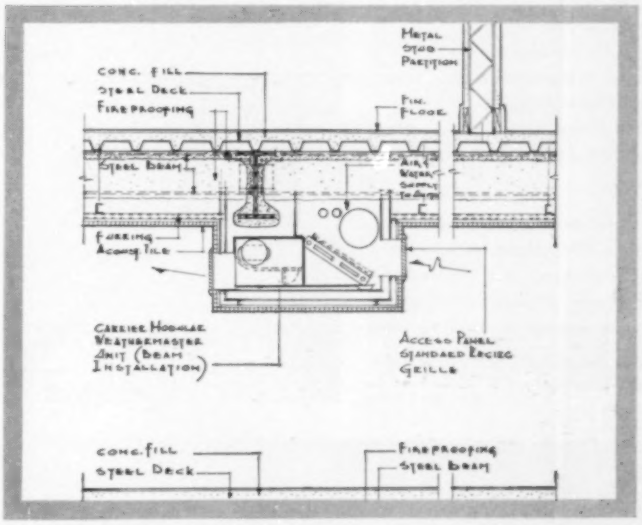
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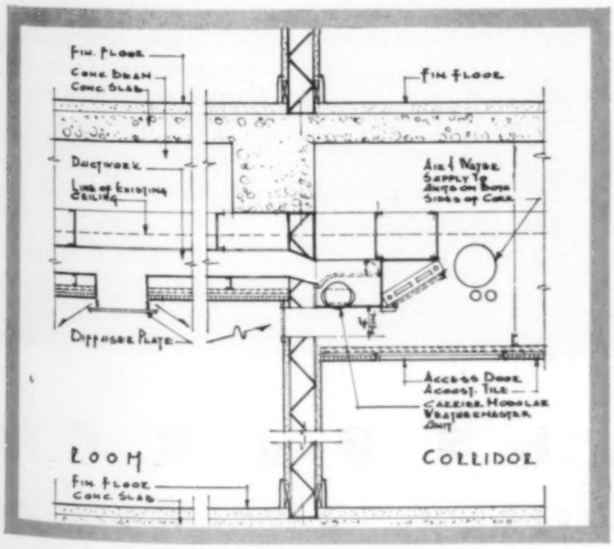
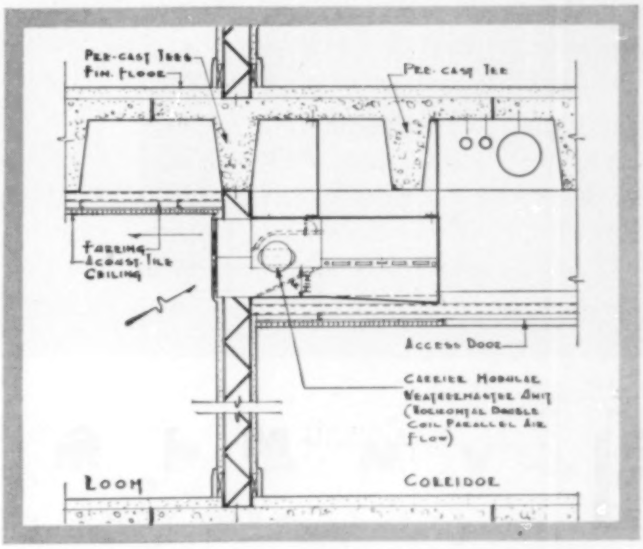
FIN. FLOOR
STEEL BEAM
AIR & WATER SUPPLY TO UNIT
FURRING
ACOUST. TILE
CARRIER MODULAR WEATHERMASTER UNIT (BEAM INSTALLATION)
ACCESS PANEL STANDARD RECIRC. GRILLE
CONC. FILL
STEEL DECK
FIREPROOFING
STEEL BEAM

In-the-space installation where structural framing requires unit be tightly fitted against fireproof beam.

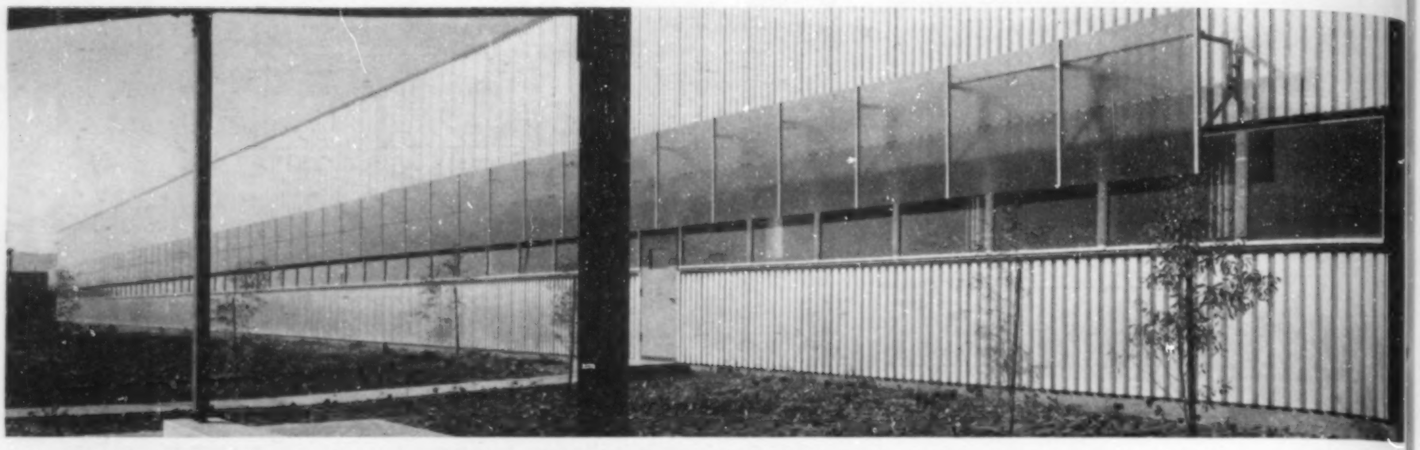

FIN. FLOOR
CONC. BEAM
CONC. SLAB
FIN. FLOOR
DUCTWORK
LINE OF EXISTING CEILING
AIR & WATER SUPPLY TO UNITS ON BOTH SIDES OF CORR.
DIFFUSER PLATE
ACCESS DOOR
ACOUST. TILE
CARRIER MODULAR WEATHERMASTER UNIT
ROOM
CORRIDOR
FIN. FLOOR
CONC. SLAB

Corridor installation using short duct from unit to standard diffuser plate outlet for ceiling distribution.


PRE-CAST TEES
FIN. FLOOR
PRE-CAST TEE
FURRING
ACOUST. TILE CEILING
ACCESS DOOR
CARRIER MODULAR WEATHERMASTER UNIT (HORIZONTAL DOUBLE COIL PARALLEL AIR FLOW)
ROOM
CORRIDOR

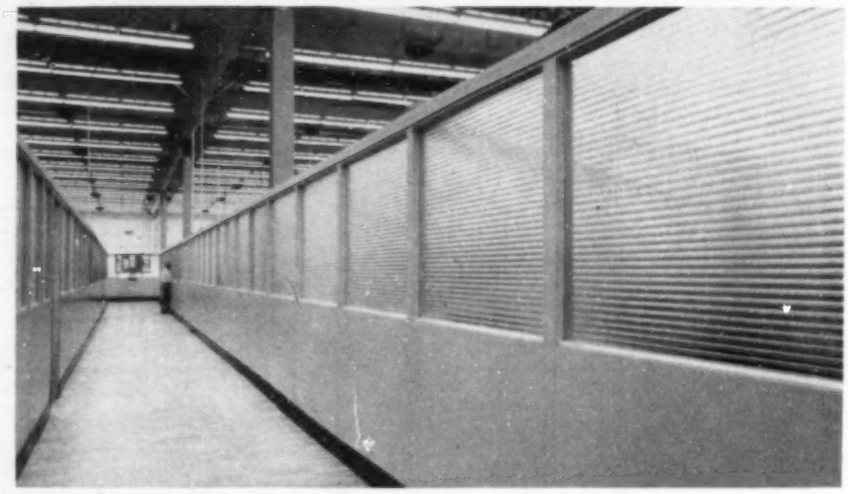
Corridor installation featuring twin coils in parallel mounting to attain extra high cooling capacity.

LIGHT DIFFUSING GLASS MAKES...



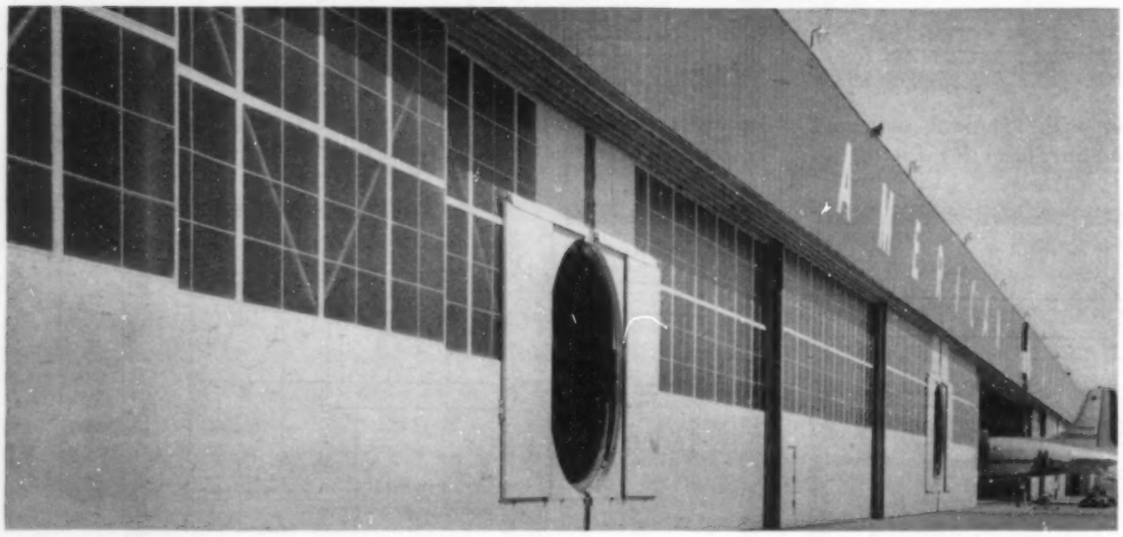
Architects: Marcel Breuer and Associates
Supervision: Craig Ellwood

A point of special architectural interest in the new Torrington Manufacturing Co. plant at Van Nuys, California is the sunshade of Coolite heat absorbing wire glass that spans the western elevation.



Complementing the spectacular new IBM offices in San Jose, California are these Hauserman partitions, glazed with lustrous Mississippi Broadlite glass.

Architect: John S. Bolles, San Franciso, Calif.
Partitions by: E. F. Hauserman Co., Cleveland, Ohio



1260 lights of ¼" Coolite Wi Glass provide better daylight with protection, while absorbing excess solar heat in expansive American Airlines Hangar at Los Angeles International Airport.

Architect: Quinton Engineers Ltd., Los Angeles, California
Glazing by: W. P. Fuller and Company, Los Angeles, California

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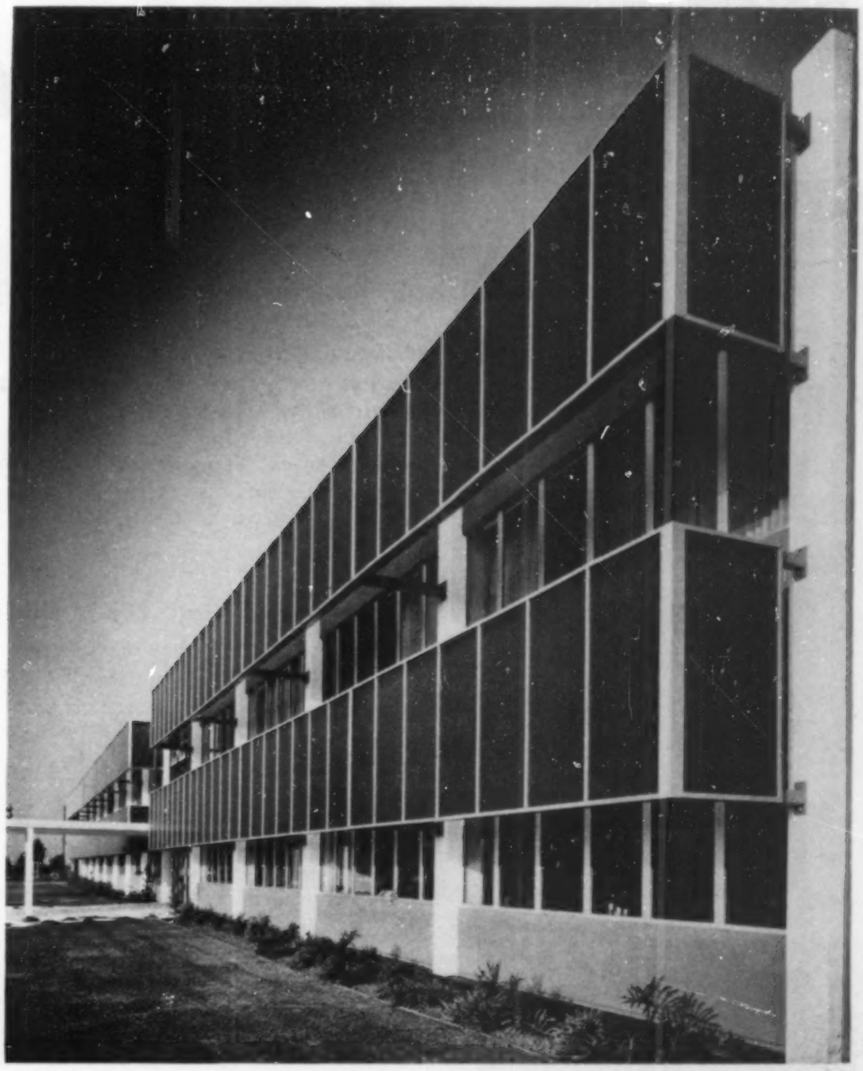
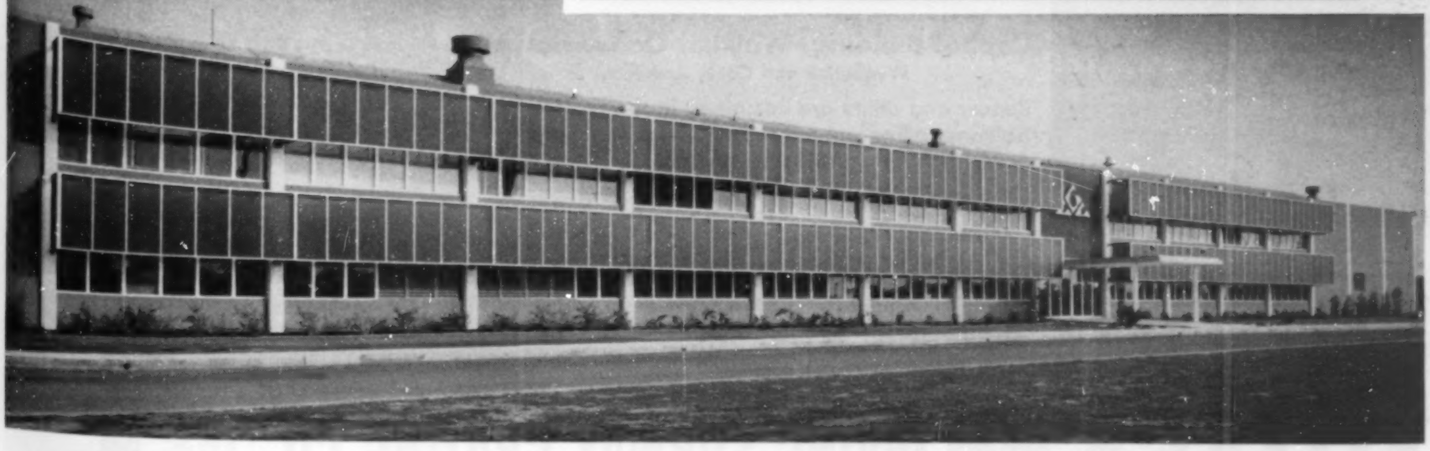


A place in the sun is especially desirable when heat absorbing blue-green Coolite Glass is there to help employees see better, feel better, work more comfortably. A brand new concept in "extended screen" glazing technique that combines beauty and utility.

Growers Container Corporation, Fullerton, Calif.
Architect: Falk and Booth, San Francisco, Calif.



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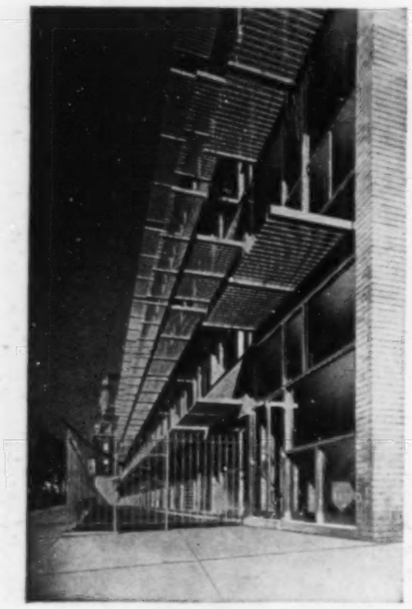

Curtis Hall, Temple University, Philadelphia
Nolen & Swinburne, Architects

An unusually light and transparent appearance is achieved in this new 4-story classroom building by the extensive use of IRVICO type CC pressure-locked aluminum grating as sunshades. These help reduce air-conditioning costs and help control sky glare. They also serve as window cleaning walkways.

Angell Hall, University of Michigan
Kahn Associated Architects and Engineers, Inc.

Vestibule mats of Irving grating prevent excessive grit, mud and wetness from being tracked into corridors of public structures, office buildings, schools and the like. Grit, rain, snow and slush drop through the open-mesh grating to receptacles below which can then be flushed into sewers. Thus a clean entrance is always assured, and the cleanliness of the interior is in turn preserved.

Capital Building, Waikiki, Oahu, Hawaii
Wimberley and Cook, Architects

Beauty and utility are combined in the balcony railing around the second floor of this new office and retail store building through the use of IRVICO type AA.

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You'll find descriptive and informative material on Cotan wall coverings in the 1958 Sweets Architectural File — section 13 k/In (Interchemical). We have extra copies for your people or your files — tell us how many you want. Address Dept. M., Cotan, 345 Oliver Street, Newark, N. J.

National Distillers and Chemical Corp.
Michael Saphier Associates, Interior Designers

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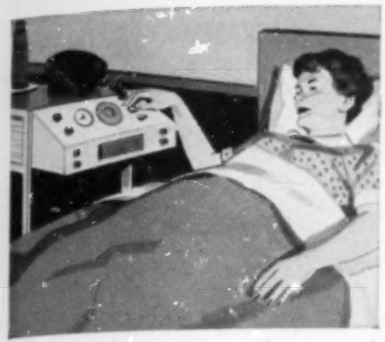
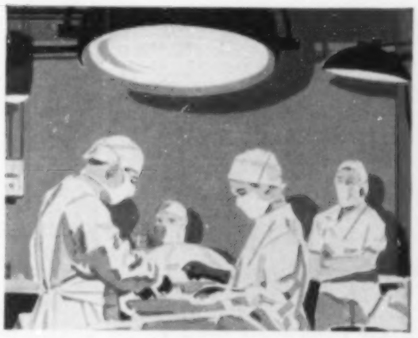
Honeywell

First in Controls

SEE THE HONEYWELL FILE IN SWEET'S CATALOG:
A/C 30d/MI, SDC 30I/MI, Hotel 33a/MI



Bedside Self-Service control center. A mobile bedside table incorporates: nurse intercom, clock, telephone outlet, light dimmer and control and other functions as desired.



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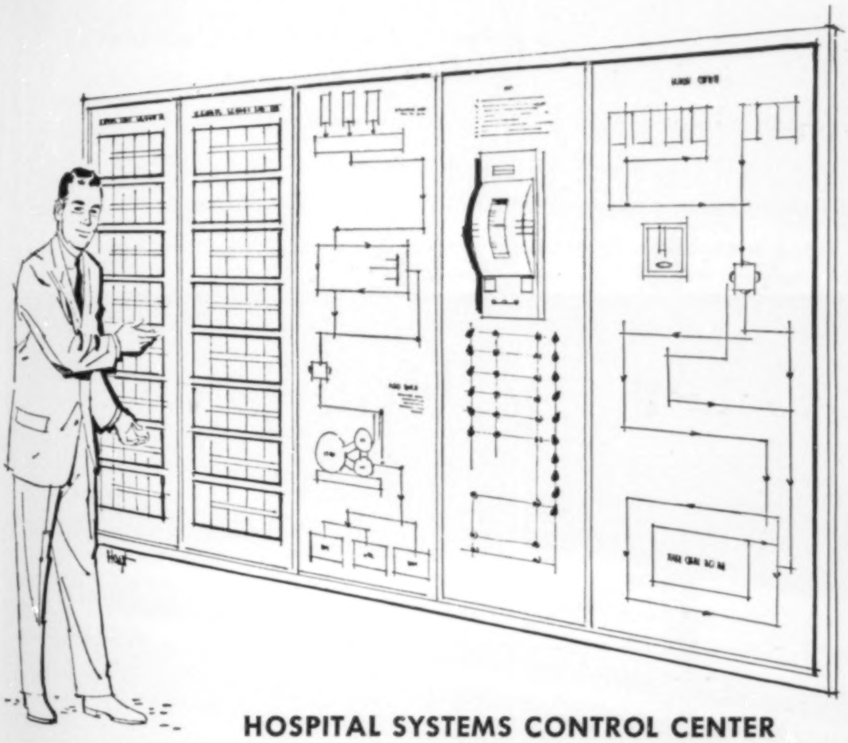

HOSPITAL SYSTEMS CONTROL CENTER

Such a center can be designed by Honeywell, placing at the fingertips of the hospital's plant supervisory staff all the functions pictured and described on this page. Similar systems can be designed for schools, stores, factories, all types of commercial buildings.

Light Saver uses photo-electric equipment to automatically operate artificial lights, supplement daylight entering large areas. This reduces light bills, saves time for personnel.

Mechanical Failure Detection. From his central panel, the maintenance supervisor can spot trouble at any point in the system, dispatch crews before breakdowns occur.

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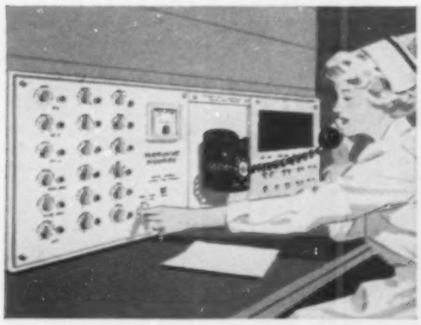
Maintenance Crew Monitoring. No time lost in locating or dispatching maintenance crews. Check-in buttons at various points about buildings and grounds operate lights on board, tell supervisor their location.



Centralized Remote Control and communication. A nurse can control temperature in sterile and other areas where control is undesirable for occupants, and can communicate with those areas through the same panel.

These PITTSBURGH DOORS help achieve modern, progressive, open-vision designs

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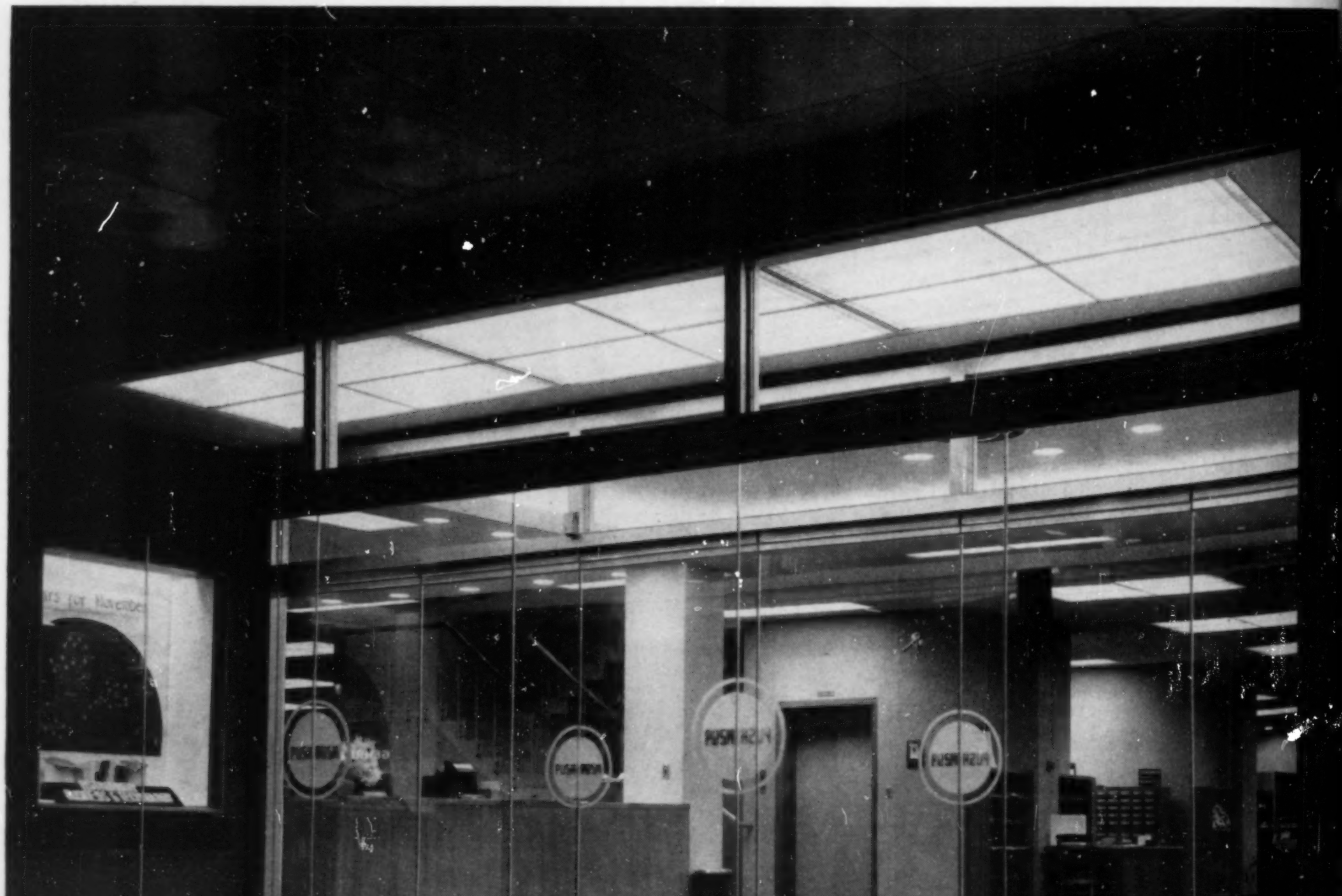
This new structure, housing the Tacoma Public Library, Tacoma, Washington, utilizes Pittsburgh HERCULITE Doors and Polished Plate Glass in an entrance design of superior quality and appeal. Architects and building owners from coast to coast prefer HERCULITE Doors because of their architectural flexibility, dependability and trouble-free operation. HERCULITE is high-quality Tempered Plate Glass, having four times the strength of ordinary glass of the same thickness. Architect: Silas E. Nelsen, A.I.A., Tacoma, Washington.



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The Markey-Elliott House of Furniture, Saginaw, Michigan, has TUBELITE Doors and Pittsburgh Polished Plate Glass installed at the entrance for maximum open-vision. TUBELITE Doors and Frames are adaptable to any architectural scheme. Their lines are clean-cut and simple. Moreover, TUBELITE is recognized as an unusual advance in hollow metal entrance design, having an exclusive interlocking feature which assures the utmost rigidity. Architects: Morris & Wesolek, Bay City, Michigan.

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North Ward School

NORTH WARD
SCHOOL

PORTLAND CEMENT ASSOCIATION PHOTOS

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An economical dual application of concrete was developed for the construction of the North Ward Elementary School in Superior, Nebraska. On both the inside and outside of this handsome school building, concrete walls were left exposed.

Architectural concrete exterior walls provide an attractive, low-annual-cost exterior treatment for the entire building. On the inside, lightweight concrete masonry walls fulfill a load-bearing as well as a decorative purpose. The interior ceiling was constructed of exposed concrete filler-blocks to provide additional economies when used with the thin concrete roof slab.

This unique school building provides a total of 22,750 sq. ft. of space at a cost of $11.33 per sq. ft.—is an outstanding example of the way architectural concrete and concrete masonry provide beauty, economy, and long life with minimum maintenance. Ideal Cement was used exclusively for all concrete and concrete masonry units in North Ward Elementary School.

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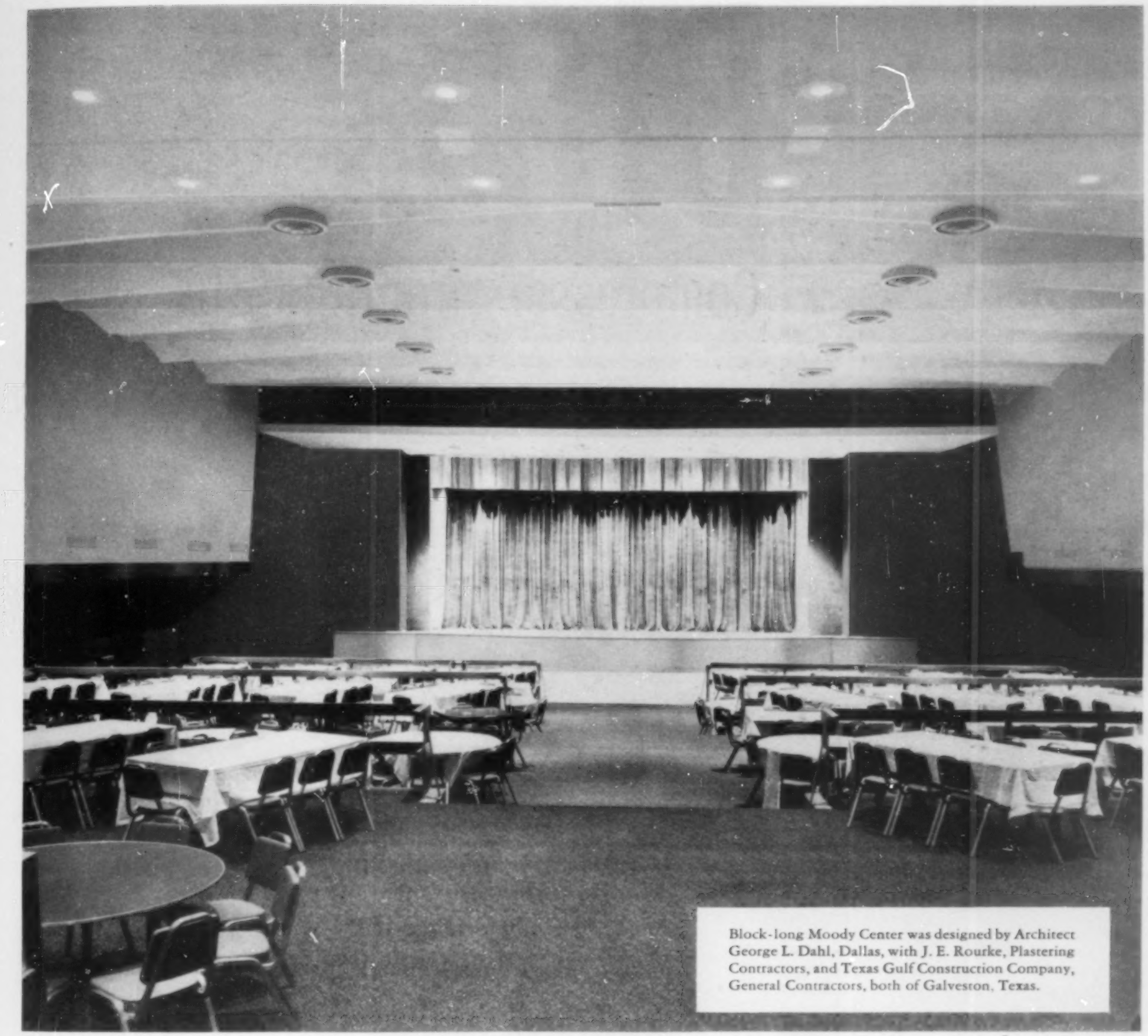

Block-long Moody Center was designed by Architect George L. Dahl, Dallas, with J. E. Rourke, Plastering Contractors, and Texas Gulf Construction Company, General Contractors, both of Galveston, Texas.

Intricate ceilings at Moody Center have SPRAYED-ON ACOUSTICAL QUIET

The saw-tooth ceiling in Galveston's new Moody Center has acoustical value as well as unusual beauty. Gold Bond Sprayolite Acoustical Plaster was sprayed on the irregular surfaces to give this auditorium a Noise Reduction Coefficient of .55, plus high light-reflection... important features when 3000 people are watching a Broadway production.

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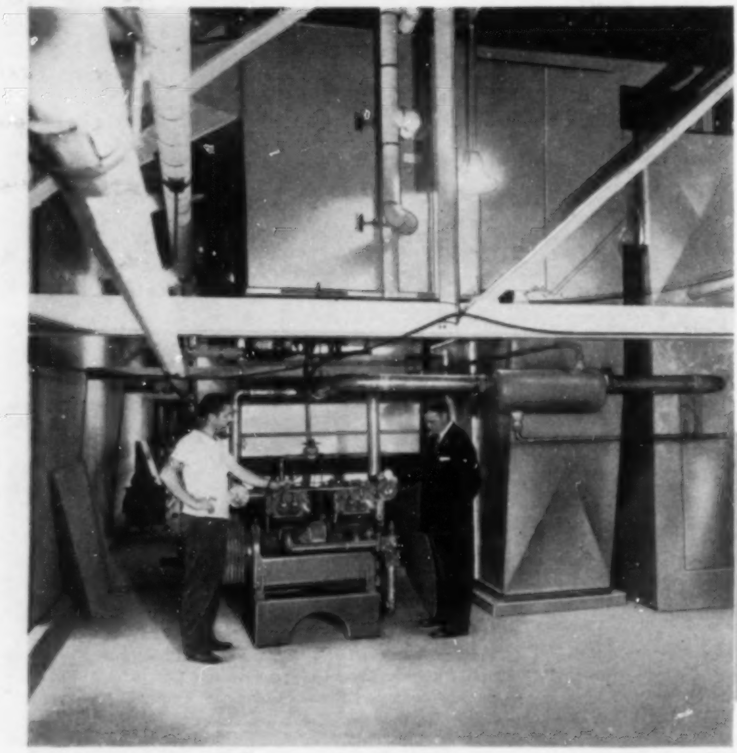

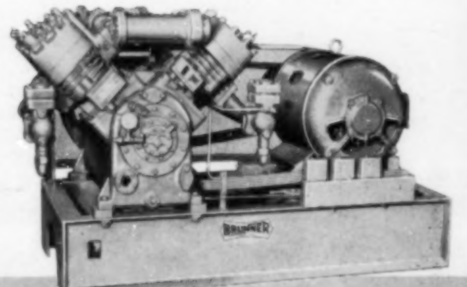

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It's the familiar story of *simplicity*—simplicity of design and simplicity of construction method. These, together with Lone Star Masonry Cement—used on both interior and exterior work—gave these modern school buildings their quality plus economy.

Interior walls and partitions were built of integrally-tinted 8″ Waylite block made with 'Incor'* and laid up with ready-to-use Lone Star Masonry Cement.

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*Reg. U.S. Pat. Off.

TAPPAN HILL and **JOHN PAULDING SCHOOLS**, Tarrytown, N. Y.
Architect: **ROBERT A. GREEN**, Tarrytown, N. Y.

Contractors:
JAMES ROMEO & ASSOCIATES, Tuckahoe, N. Y. (Tappan Hill)
STEWART M. MULLER, INC., Croton, N. Y. (Paulding)
TOMRICH CONSTRUCTION CO., INC., Hartsdale, N Y. Masonry (Paulding)
"Incor" Waylite Block: **CASTLE BLOCKS INC.**, Tarrytown

"Lone Star" Masonry:
A. P. HUSTED CO., INC., Tarrytown
HUDSON RIVER YARDS CORP., Tarrytown

JOHN PAULDING SCHOOL (above): Attractive, low-cost primary school in Tarrytown, N. Y. Classrooms are self-sufficient, each with own facilities.

TAPPAN HILL SCHOOL (right): Interior walls are of 'Incor' Waylite block, brick exterior. Lone Star Masonry Cement used throughout.

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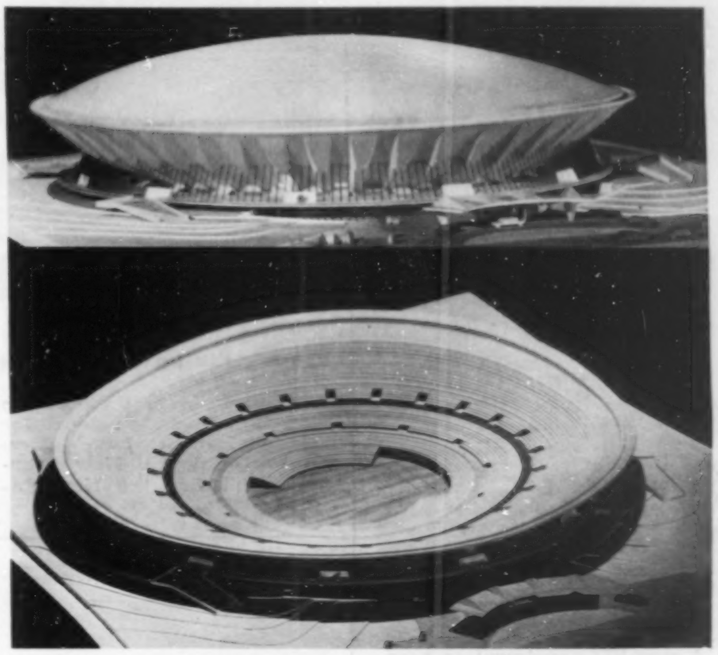
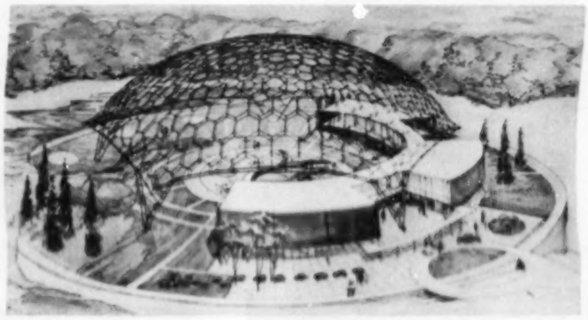
Projects

A roundup of recent and significant proposals



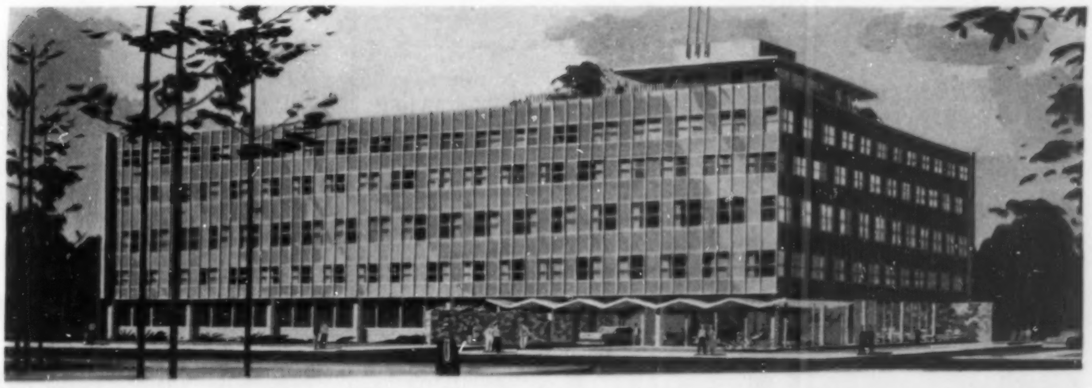
CONCRETE SAUCER

The University of Illinois at Champaign-Urbana will build this giant monolithic saucer (right) as an assembly hall. The saucer's lid, plastic coated, will be a folded concrete shell with a 400-foot span. A band of thin steel wire will be wrapped around the perimeter at the point where the lid meets the saucer. The giant building was designed by Harrison & Abramovitz to accommodate a wide range of college activities: assemblies, basketball games, theatrical performances, symphonies, lectures, exhibitions. Cost: $7.5 million.



METAL SPIDER WEB

Seen from the air, the double geodesic dome spanning the American Society for Metals headquarters (photo left) near Cleveland will look like a giant spider web touching the earth at only five points. Two domes constructed of aluminum tubing, one 30 inches inside the other, will form hexagon and pentagon shapes in an overlapping, open latticework. Other metals and alloys will be used in the building itself, which will be covered only partially by the dome. Designers: R. Buckminster Fuller (dome) and Kelly & Kress.



BRIGHT BLUE HOTEL FOR DOWNTOWN MILWAUKEE

Encouraged by demands from civic groups and local newspapers for a new hotel in downtown Milwaukee, several Chicago and Milwaukee investors have announced plans to build the $2 million hotel above. Another demand—for convention and meeting space—will be met, and there will be 180 rooms and 200 parking spaces behind the blue porcelain enameled steel façade. Architects: Rosen & Horowitz, Holabird & Root & Burgee.

$40 MILLION HOSPITAL ON CHICAGO'S WEST SIDE

A giant building program, to cost $40 million, is planned for Presbyterian–St. Luke's Hospital in Chicago. Now nearing completion, the New Pavilion (left in photo above) was designed by Burnham Brothers & Hammond. Four other major buildings, all designed by Skidmore, Owings & Merrill, will follow: the largest of these is the South Building for medical science research in the center of the project.

RIVER APARTMENTS

A new 278-apartment cooperative (above) overlooking Manhattan's East River will actually extend out over the Franklin D. Roosevelt Drive. Designed by Paul Resnick in association with Harry F. Green, the apartments will sell for $7,650 for three rooms to $67,500 (plus annual charges) for a seven-room penthouse, four baths, and a terrace. Exterior will be gray glazed brick and granite.

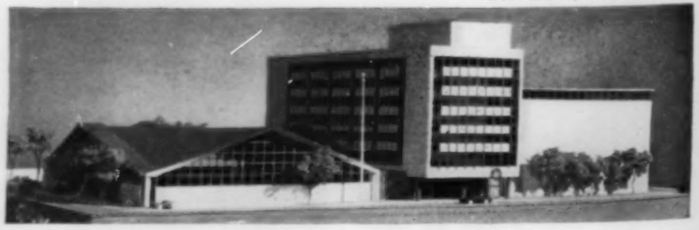
KAISER CENTER

Oakland is the site of the projected $45 million Kaiser Center (left)—world headquarters for Kaiser Industries Corp. and more than 50 affiliated companies. In addition to the 28-story office building, curved to follow Lake Merritt's shore line, there will be a shopping center, a five-level parking garage for 1,200 cars, and a four-acre roof garden. Anodized gold and gray aluminum and glass will sheathe the office building front and back; end sections will be precast white stone. Architects: Welton Becket & Associates.

SKYSCRAPER FOR L. A.

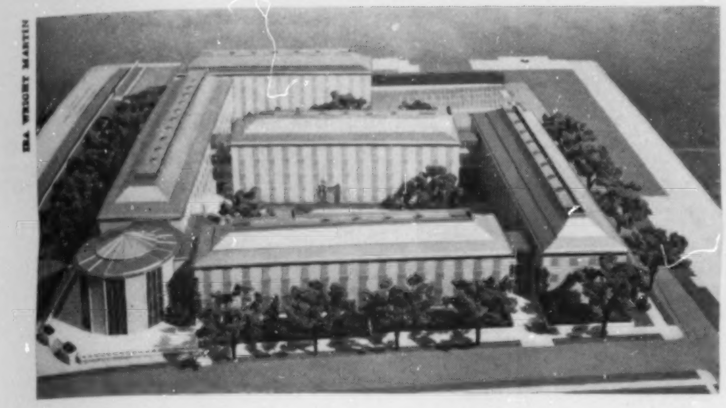
The lifting of its long-standing height limitations has brought Los Angeles many skyscraper building proposals. One of the most recent is this 21-story, $10 million office building (left), designed by Architect W. Douglas Lee, and his son, D. Everett. They will build the tower and give it their name: Lee Tower. The building, on a Wilshire Blvd. corner, will be sheathed in glass and steel and will contain a 500-car parking garage extending from basement to sixth floor. A rooftop dining club and recreation area also will be provided.

HUBE HENRY, HEDRICH-BLESSING



CHICAGO FIRE AND POLICE ACADEMY

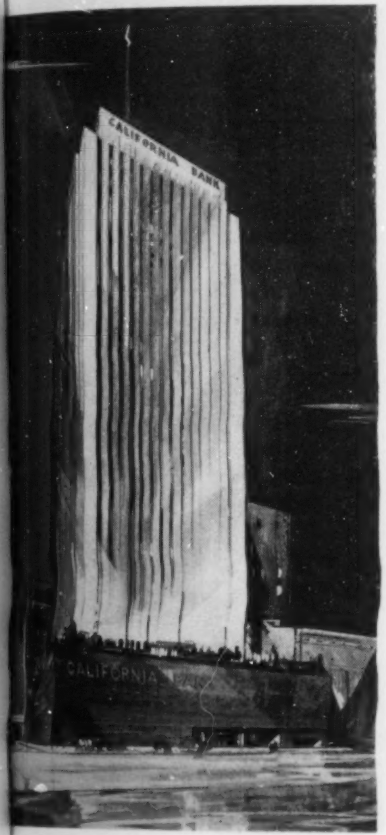
On the site of Mrs. O'Leary's famed barn—where the great Chicago fire of 1871 supposedly started—the City of Chicago plans to build an appropriate structure: a seven-story Fire and Police Academy building (above) of fire-resistive reinforced concrete. Loebl, Schlossman & Bennett designed the administration building and the drill hall with its hyperbolic paraboloid roof. Cost: $3.5 million.



IRA WRIGHT MARTIN

PRINCETON ENGINEERING QUADRANGLE

The number of Princeton undergraduates in the engineering department has risen 364 per cent since 1928 to 550 this year. To take care of their needs and those of graduate students, Princeton will build the $8 million engineering quadrangle shown at left, designed by Voorhees, Walker, Smith & Smith. The three tightly grouped buildings will house the electrical, chemical, civil and geological engineering departments, all roofed with a nickel alloy metal. The silo-like structure at the corner of the site will house the main entrance lobby; administration building, right.



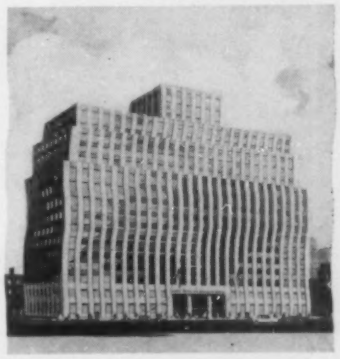
BANK TOWER

The California Bank, whose resources have expanded 600 per cent since 1940, will build the $13 million tower shown at left to provide a head office for its 63 branches. Claud Beelman & Associates designed the 18-story building for a corner site in downtown Los Angeles. The lower three stories, faced with granite, will have a 23-foot setback; the tower portion, of limestone facing and porcelain enamel panels, will rise 15 more stories. The California Bank itself will occupy about three-fourths of the new building and lease the rest.

HERBERT BRUCE CROSS

FASHION SQUARE IN SANTA ANA, CALIFORNIA

Twenty-five specialty stores, eight of them grouped around a square, are now under construction on a 45-acre site in Santa Ana, California. Bullock's, the largest store, was designed by Pereira & Luckman, supervising architects for the entire Fashion Square project. Other stores, designed by various architects, conform to the central design theme—a contemporary version of early Spanish influence in California.

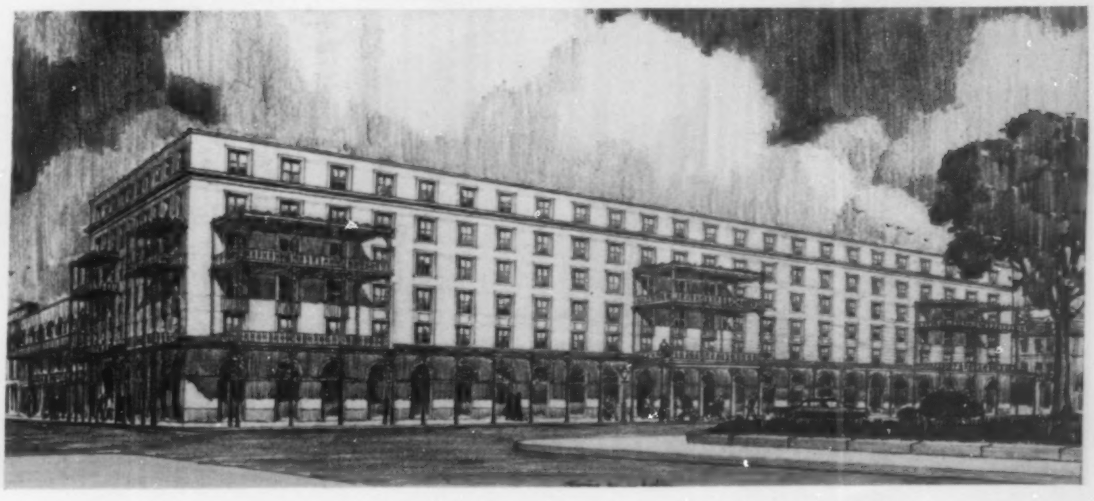


INSURANCE OFFICES

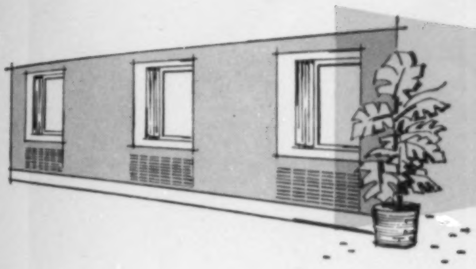
In the heart of Manhattan's insurance district, a 17-story multi-tenant office building is now under construction. Already signed up as a tenant, the U.S. Life Insurance Company will lease 40 per cent of the new building's 250,000 square feet of rentable office space. Sylvan and Robert Bien designed the $10 million limestone-and-brick building.

OLD LOOK IN NEW ORLEANS

For 40 years, the site of the famous St. Louis Hotel of New Orleans (destroyed by a hurricane in 1915) has waited to be filled. Now, a new hotel will rise there, and it will not look much different from the old St. Louis. For the French Quarter site Architects Curtis & Davis with Richard Koch and Samuel Wilson Jr., have designed a $6 million, 350-room hotel complete with fancy grillwork balconies and walkway arches. Although the exterior will recall the glories of Old New Orleans, the interior will be modern.



Milcor Wall Unit installation in
Prudential Building, Minneapolis, Minn.



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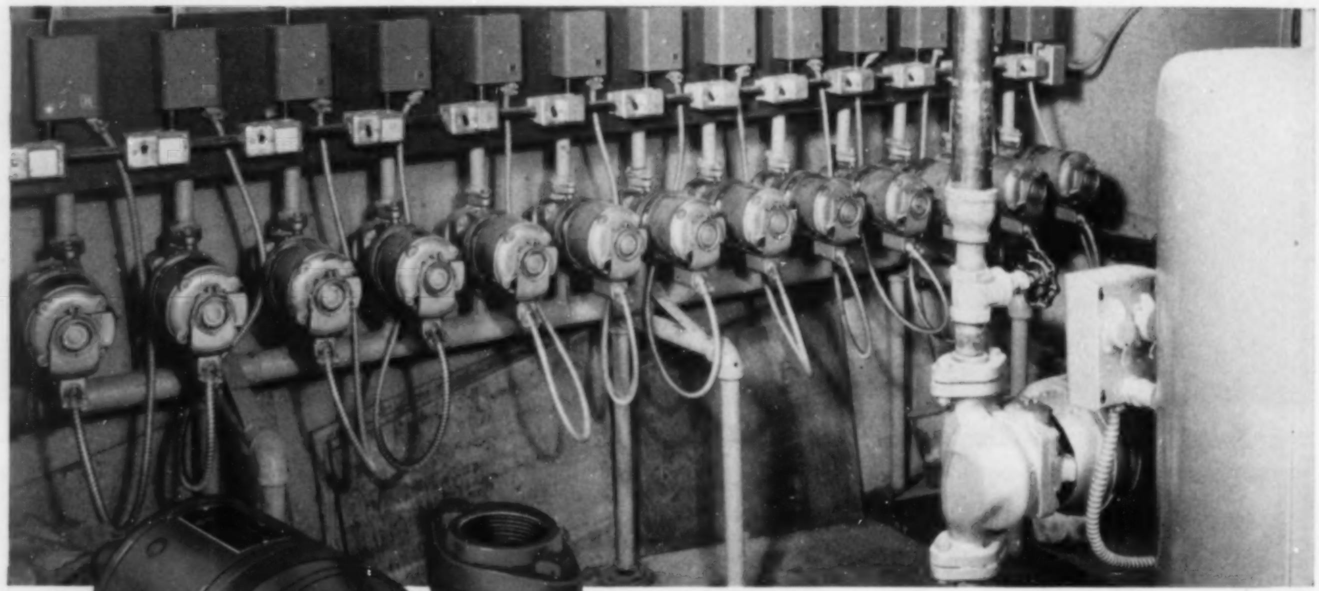

B&G Hydro-Flo System installation in Tulip City Motel, Holland, Michigan

While motel heating is notoriously difficult because of rambling construction and irregular occupancy, the B&G *Hydro-Flo* System provides a practical and economical solution.

The motel illustrated above was originally heated with individual room space heaters. Two years ago the heating method was completely revamped by installing a B&G *Hydro-Flo* System with baseboards as the heat distributors. Each of the rooms is on a separate zone, served by a thermostatically controlled B&G Booster. The owner reports a great improvement in comfort, with temperatures properly controlled and operating costs low.

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Housing starts and capital spending cast shadows on bright building picture

As the business dip has grown into a full-fledged recession, economists, builders, and lenders have increasingly found their cheeriest reading in construction figures. Spending figures so far this year have been bright indeed, pointing toward another record building year (table, lower left). Building, particularly of new homes, has in recent weeks been considered the biggest offset to the decline in manufacturing output, and January figures on new housing starts seemed to bear this feeling out (FORUM, March 1958). But February figures on new housing starts, plus a few other indicators, are causing the building industry to take a long second look. For instance:

▶ Spending for new plant and equipment is dropping even more than was originally anticipated. The Securities & Exchange Commission and Department of Commerce capital spending survey indicates that such spending will total around $32 billion this year, or about 13 per cent less than the $37.5 billion spent last year. In the second quarter of this year, capital spending is expected by SEC-Commerce to be running at an annual rate of only $32.5 billion, well below last year's $37 billion mark for that period. Even more gloomy was an estimate by the National Industrial Conference Board that 1,000 of the largest manufacturing corporations had appropriated 33 per cent less money for capital spending in the fourth quarter of last year than they did in the fourth quarter of 1956, indicating further drops in future capital spending by manufacturers.

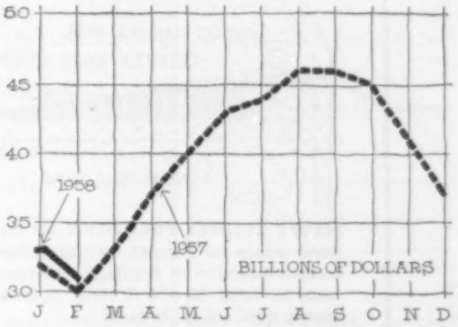
▶ Contract awards for future construction in January dropped 10 per cent below January 1957, the sharpest year-to-year drop in more than a year. F. W. Dodge Corp. reported declines of awards in practically every category of construction, with two of the biggest drops showing up in manufacturing buildings (off 53 per cent) and heavy engineering (off 7 per cent). Bad weather was considered a big factor in the year-to-year picture, but, meanwhile, awards have been moving up somewhat from the December level, indicating that the current trend is not so much a dip as is indicated by year-to-year figures.

▶ Private nonfarm housing starts declined 7 per cent from January to February, and were off 5 per cent from February 1957. At seasonally adjusted annual rates, February starts were 890,000 (lowest since April, 1949) compared to 1,030,000 in January.

The housing start figures were particularly disconcerting because they were unexpected. Much of the blame for the lower figures can be put on the weather, but there has been bad weather in previous Februaries, and starts have gone up from January to February in every year since 1951. Offsetting the lower figures for February starts is the continuing upsurge in applications for mortgages insured by the Federal Housing Administration. Such applications boomed in January, compared to their relatively low levels of a year previous, and in February were 70 per cent higher than in February 1957. Housing is expected to get a shot in the arm with the expected passage of the Sparkman bill, which should not only spur the mortgage market by further easing of credit and mortgage terms, but is calculated to spark a renewal of new starts via direct lending to GIs by the Veterans Administration (page 7).

If some of the figures relating to future construction do not look so rosy, at least current spending for building is still holding up well. In February, total spending for new construction was $3,077 million, about 2 per cent higher than February 1957. And, even though the number of starts were off in February, spending for residential

continued on page 47



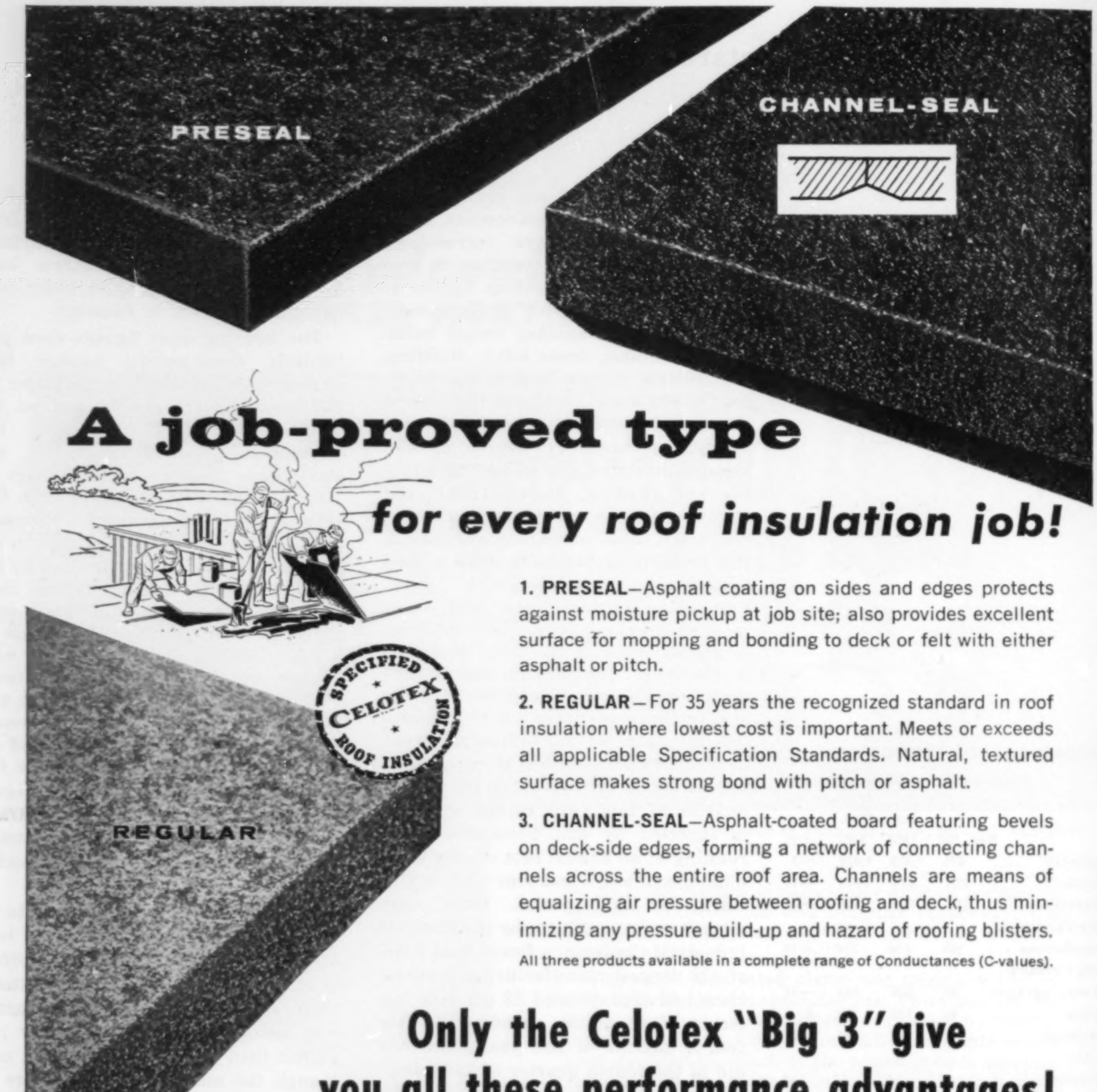
NEW CONSTRUCTION EXPENDITURES in February totaled $3.1 billion (current dollars), down slightly from January, but about 2 per cent higher than February 1957.

BOX SCORE OF CONSTRUCTION

(Expenditures in millions of dollars)

		Jan.-Feb.		
PRIVATE BUILDING	Feb. '58	1958	1957	±%
Nonresidential	675	1,379	1,426	—3
Industrial	231	471	539	—13
Commercial	254	521	526	—1
Office buildings: warehouses ...	155	316	278	+14
Stores; restaurants; garages	99	205	248	—17
Religious	64	132	132	0
Educational	40	82	84	—2
Hospital; institutions	47	94	67	+40
Residential (nonfarm)	1,065	2,196	2,180	+1
Public utilities	407	823	722	+14
Total Private*	2,262	4,626	4,550	+2
PUBLIC BUILDING				
Nonresidential	306	644	641	†
Industrial	26	56	81	—31
Educational	201	426	405	+5
Hospital; institutions	22	44	47	—6
Residential	58	116	60	+93
Military	70	150	173	—13
Highways	205	440	420	+5
Sewer; water	88	184	193	—5
Total Public*	815	1,721	1,655	+4
*Grand Total	3,077	6,347	6,205	+2

* *Minor components not shown, so total exceeds sum of parts.*
† *Less than 1 per cent.*



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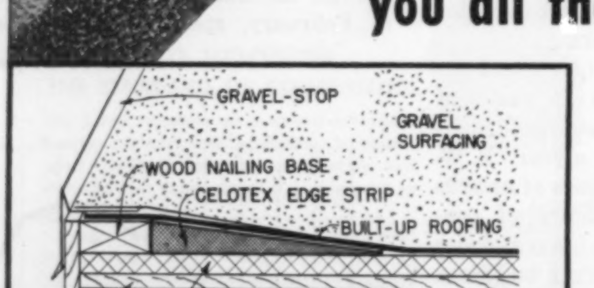

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See 1958 Sweet's Architectural File, Catalog 10a-Ce.
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building was 2 per cent higher than February 1957. This was the first time since December 1955 that there has not been a decline in the year-to-year spending comparisons.

Most economists are still sticking by their original forecasts of slightly higher spending for building this year than last, and they say the key to how much higher lies in building proposals coming out of Washington. If housing and public works (see below) are expanded appreciably by federal moves, this could more than make up for the expected drops in spending by business for new industrial plant and in some categories of commercial building, particularly stores and restaurants.

PUBLIC BUILDING

Federal public works spending speeded

In Milwaukee last month, 250 men on relief went to work digging a park lagoon while earth moving machinery stood idly by. In Springfield, Gov. William Stratton announced that the State of Illinois would soon begin a $400 million public works program with most of the spending to go for new highways.

Milwaukee's make-work project and Illinois' public works program were just two examples of local self-help and make-work in the face of deepening recession. Other cities and other states are either talking about or already pushing some sort of public works, but right now, most of them are waiting to see what the Eisenhower Administration is going to do about the slump.

By the end of last month, there were some good clues to what the federal government will do. The Administration indicated it would sit tight, without pushing any vast new public works projects, until it could evaluate unemployment and output figures for March—these figures, due by the middle of this month, will either trigger many new spending proposals or cool the recession-inspired heat on Capitol Hill. But, while there may not be any decisive action on new project proposals by the Administration until the end of this month at least, the Administration has taken steps to accelerate spending on many projects for which funds have already been authorized.

The first Administration reaction to the public works spending pressures built up by Congressional Democrats came early in February, when, among other measures, President Eisenhower proposed a $2 billion plan to modernize and build new post offices (FORUM, March 1958). Early last month, the President outlined some further steps to stimulate the economy. These moves were termed "an orderly acceleration of programs that are genuinely needed in the public interest, have long been planned, and are already approved." At the time, the President made clear his disagreement with Democratic politicians who have been tub-thumping for big public works programs, saying "I am concerned over the sudden upsurge of pump-priming schemes . . ."

Here are the projects that the Administration has moved to speed up:

▶ Funds totaling $200 million for Corps of Engineers projects, National Parks roads and parks, Bureau of Indian Affairs roads and maintenance projects will be spent "several months earlier than previously planned."

▶ Bureau of Reclamation, rivers and harbors, and watershed protection projects totaling $186 million have been accelerated and will be continued at higher spending rates until next year.

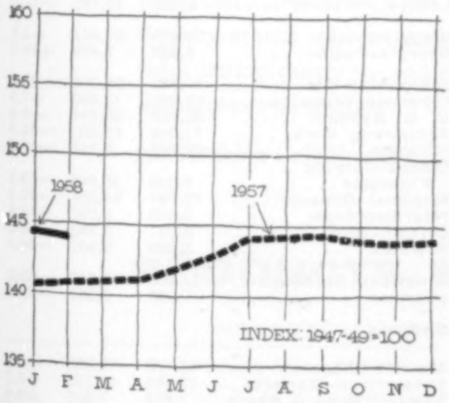
▶ President Eisenhower plans to ask Congress to permit a total of $2.2 billion more to be spent on highways, both interstate and so-called ABC roads (primary, secondary, and rural roads), in the next three years. This could only be done if Congress relaxed present spending limits, which are now keyed to income from taxes on gasoline and other highway-related items.

Besides accelerating these projects, the President released an additional $200 million to the Federal National Mortgage Association for buying FHA-insured mortgages with face values up to $10,000 as a stimulant to the building of medium-priced homes.

The President also moved to speed up some $1.3 billion in loans to local communities for sewer facilities, rural electrification, public housing, and other projects which can be put under construction quickly. Included in the loan figure is $300 million for college dormitory building.

Despite the Administration's efforts to step up spending for public works, many Congressmen, both Democratic and Republican, still are not satisfied that public works are being pushed vigorously enough. For instance, the Senate subcommittee on highways, under Senator Albert Gore (D, Tenn.), would beef up highway spending by $1.5 billion next year.

But many economists are already worrying that too fast a speed-up in public works spending will prove dangerously inflationary. They say that both public works projects and tax cuts should be used only as last resorts. If March unemployment figures do exceed the 5.2 million reached in February, however, these advocates of caution will be drowned out in the cry for still faster—and bigger—spending on public works.



BUILDING COSTS, as measured by the E. H. Boeckh & Associates index, declined from 144.3 in January to 144.1 in February (1947-49=100). The index is still 3.3 points above the figure for February 1957.

EARNINGS

Builders fared better than suppliers in 1957

The slump in home building, declining demand for many building materials, and subsequent signs of overexpansion of plant capacity were the major factors influencing the earnings of building materials suppliers last year.

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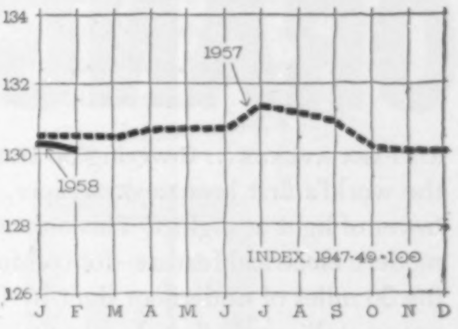

BUILDING MATERIALS PRICES declined slightly in February, from 130.3 to 130.1 on the Bureau of Labor Statistics index (1947-49=100). The drop puts the index figure at December's level and below the 130.5 mark of February 1957.

Whereas most building materials suppliers showed record or near record earnings in 1956, last year was another story. Two recent surveys indicate the extent of the earnings dip. The First National City Bank of New York found that net (after tax) earnings for 25 lumber and wood products producers were off 32 per cent from 1956; those of 61 cement, glass and stone makers were off 5 per cent. Earnings for 15 paint and varnish makers were about the same as in 1956, according to the bank's survey. Another survey, by the *Wall Street Journal*, showed net earnings of 27 building materials suppliers off 11.4 per cent for the year.

Cement producers were adversely affected by last summer's five-week strike, and by lower-than-expected demand for cement from the highway program.

The continuing high volume of heavy building boosted earnings of those steel companies which supply the bulk of the industry's structural shapes, even though there were indications last year that demand for shapes was slackening somewhat (FORUM, January 1958).

The builders themselves did much better than did their suppliers (see table below). F. H. McGraw rang up earnings more than twice as high as its 1956 net, and George A. Fuller Co. enjoyed a nearly 20 per cent increase.

PROFITS IN BUILDING
(thousands of dollars)

Building materials manufacturers	Net earnings (after taxes) 1957	1956	±%
U.S. Steel	419,407	348,099	+20.5
Bethlehem	191,026	161,412	+18.3
Inland	58,877	52,999	+11.1
Kennecott Copper	79,223	143,154	—44.6
Alcoa	75,568	89,621	—15.7
Reynolds Metals	37,810	41,240	—8.3
Kaiser Aluminum & Chemical	26,829	42,349	—36.6
Lone Star	15,612	16,155	—3.4
Ideal	14,479	14,920	—3.0
Lehigh Portland	8,892	10,725	—17.1
Weyerhaeuser	53,425	51,447	+3.8
Georgia-Pacific	8,532	7,429	+14.8
Johns-Manville	17,782	25,003	—28.8
*Sherwin-Williams	15,098	13,995	+7.9
U. S. Gypsum	38,757	40,614	—4.6
Armstrong Cork	11,069	13,320	—16.9
*Glidden	7,264	8,147	—10.8
Owens-Corning Fiberglas	9,008	10,448	—13.8
National Gypsum	12,791	14,264	—10.3
†Harnischfeger	3,810	3,257	+16.9
Certain-teed	2,237	2,392	—6.5
†Celotex	3,888	5,902	—34.1
American Standard	12,605	19,648	—35.8
†Carrier	7,286	9,369	—22.2
Builders			
Merritt-Chapman	13,170	12,882	+2.2
††American-Marietta	17,183	16,205	+6.0
Electric Bond & Share	7,672	7,409	+3.6
Raymond Concrete Pile	5,300	4,465	+18.7
F. H. McGraw	1,343	529	+153.8
George A. Fuller	938	791	+18.6
Utah Construction	806	489	+64.8

* Years ended August 31.
† Years ended October 31.
†† Years ended November 30.

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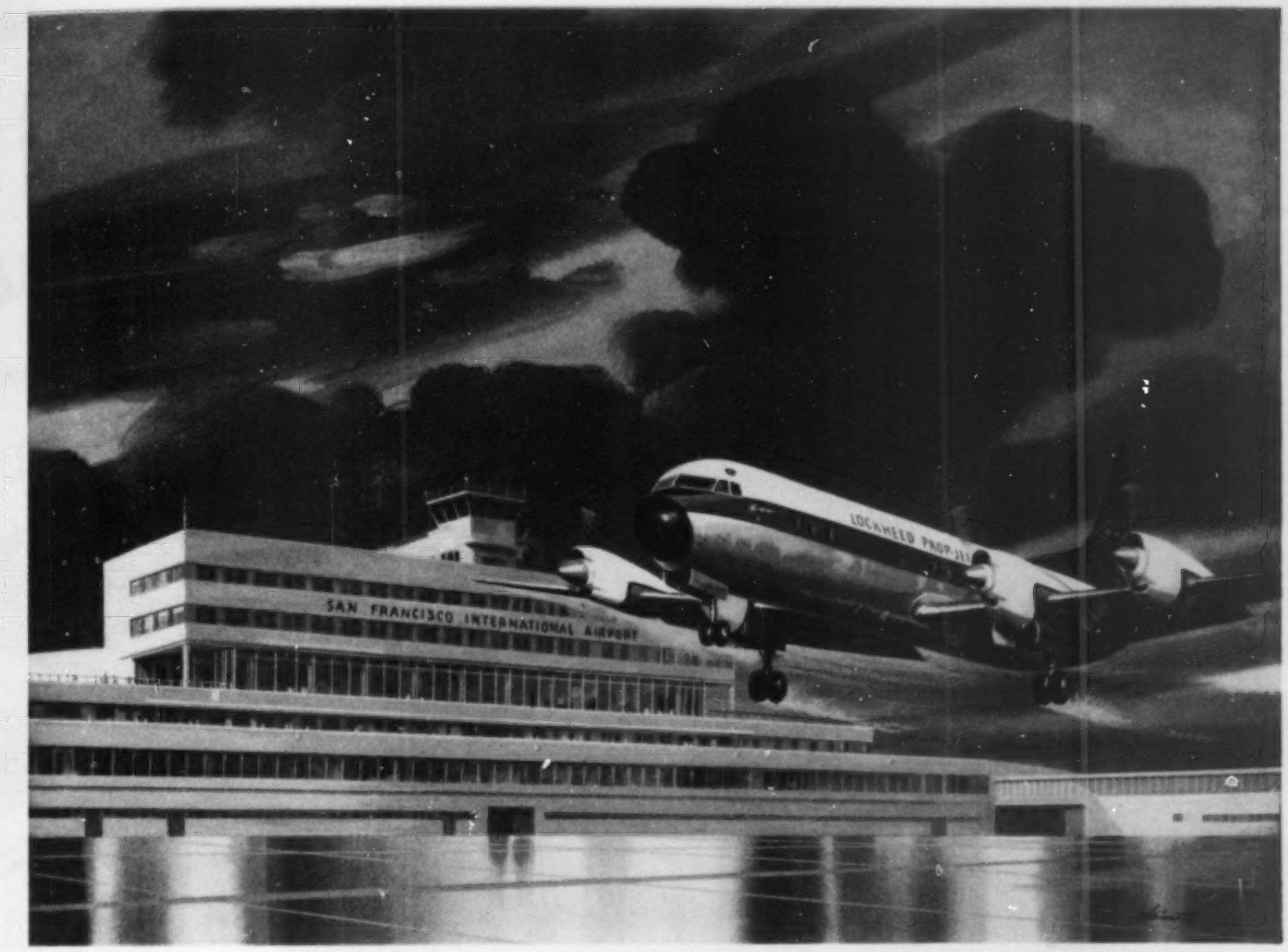

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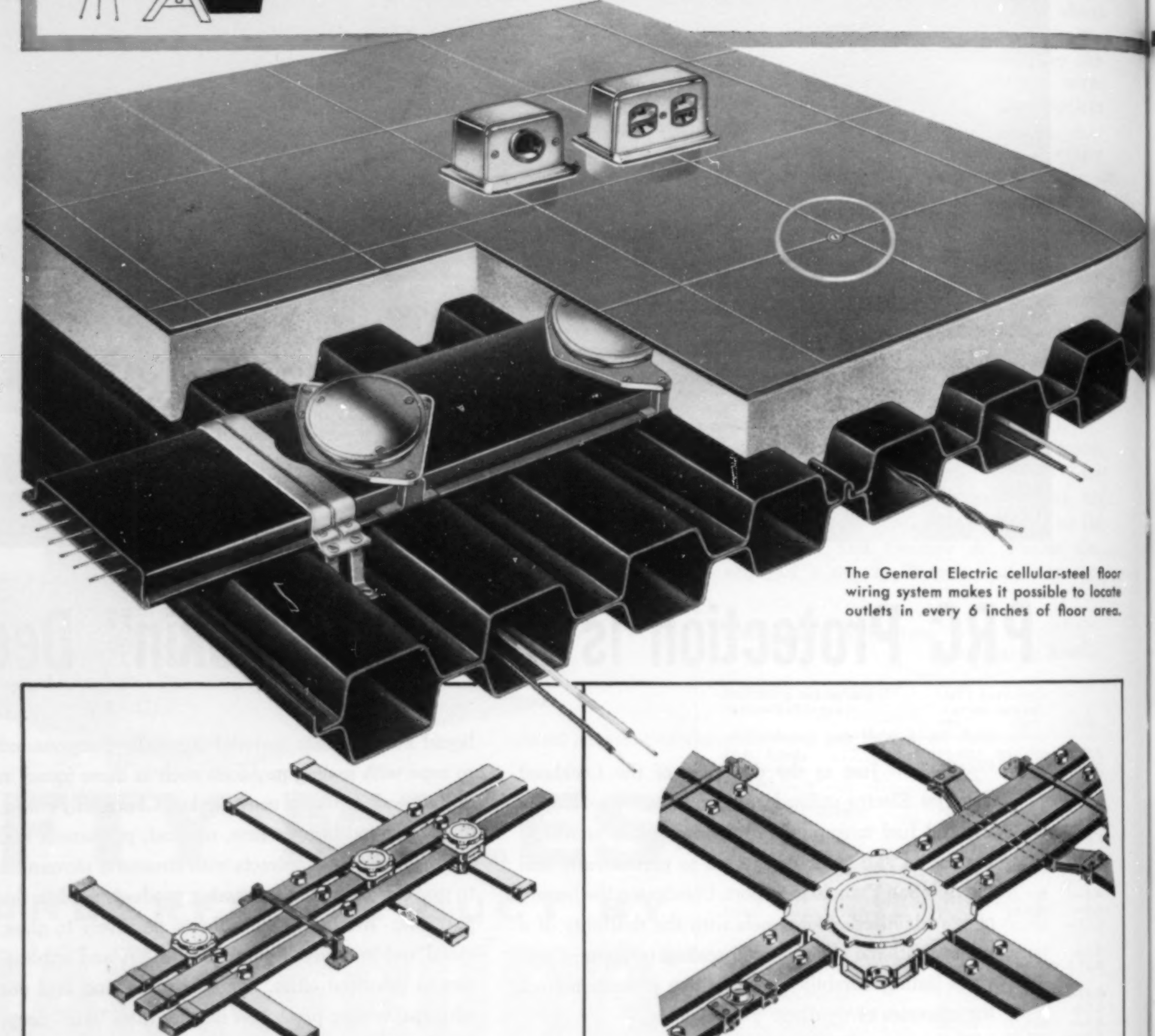
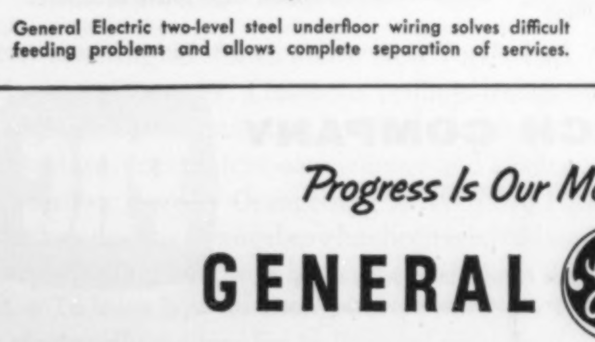
Gloucester City, New Jersey, WOodlawn 4-3010

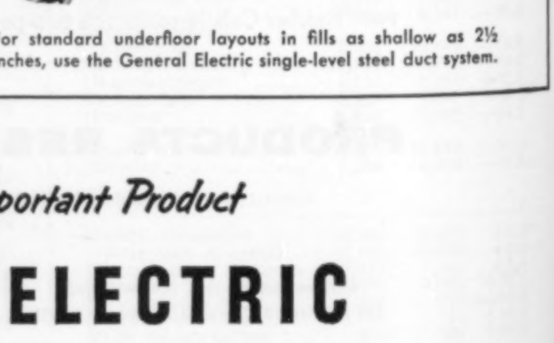
7 QUESTIONS before specifying or



The General Electric cellular-steel floor wiring system makes it possible to locate outlets in every 6 inches of floor area.



General Electric two-level steel underfloor wiring solves difficult feeding problems and allows complete separation of services.



For standard underfloor layouts in fills as shallow as 2½ inches, use the General Electric single-level steel duct system.

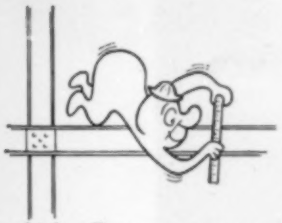
Progress Is Our Most Important Product

GENERAL ELECTRIC

TO CONSIDER
purchasing underfloor wiring

1. DOES THE SYSTEM MEET BOTH STRUCTURAL AND ELECTRICAL REQUIREMENTS?

Practically any combination of structural and electrical specifications can be met by General Electric's range of 3 underfloor wiring systems. For standard layouts in fill and slab or monolithic floors, for example, the G-E single-level steel system is ideal. General Electric's two-level system offers greatly increased feeding capacity and *complete* separation of services. For cellular-steel floor construction, G-E cellular-steel floor wiring makes it possible to locate outlets in every 6 inches of floor area. All 3 systems provide excellent grounding facilities.

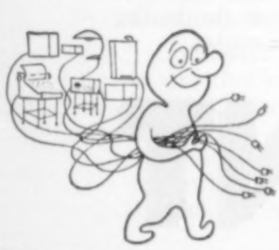


2. WILL THE SYSTEM FIT THE FLOOR FILL?

Fill as shallow as 2½ inches can be used with the General Electric single-level system. The G-E two-level system, which offers greater capacity and flexibility, can be accommodated in a minimum fill of 3½ inches. General Electric's header duct for wiring cellular-steel floors now offers 41% additional capacity yet fits in the normal 2½ inches of concrete.

3. IS THE SYSTEM EASY TO INSTALL?

Even inexperienced crews find General Electric systems easy to install, because they are straightforward in design and accurately made to close tolerances. The component parts fit together without difficulty—save time on the job.



4. WILL THE SYSTEM HANDLE THE NUMBER OF SERVICES ANTICIPATED?

Any number of services can be handled by the General Electric cellular-steel floor wiring system or by the G-E two-level underfloor distribution system. Both feature complete separation of services, with each service occupying a separate junction unit. For standard layouts with up to three services, use the G-E single-level duct system.

5. IS THE MANUFACTURER PREPARED TO GIVE ASSISTANCE?

General Electric's underfloor field representatives help you plan your system if desired, and stay with every job until they are sure installation is satisfactorily under way. G-E representatives are ready to put years of experience to work for you the moment you need it.

6. ARE ALL NECESSARY COMPONENTS AVAILABLE FROM THE MANUFACTURER?

A full line of components is available from General Electric. With 29 years experience in underfloor wiring, G.E. has anticipated nearly every installation requirement and can provide the components needed to do the job.

7. DOES THE SYSTEM MEET ACCEPTED CODES AND STANDARDS?

Underwriters' Laboratories, Inc., lists all three General Electric systems. They also meet Federal Specifications.

Send your own questions to General Electric, or send the coupon for data and installation manuals on G.E.'s three underfloor systems.

To General Electric Company
Conduit Products Department, Section C82-44
Bridgeport 2, Connecticut

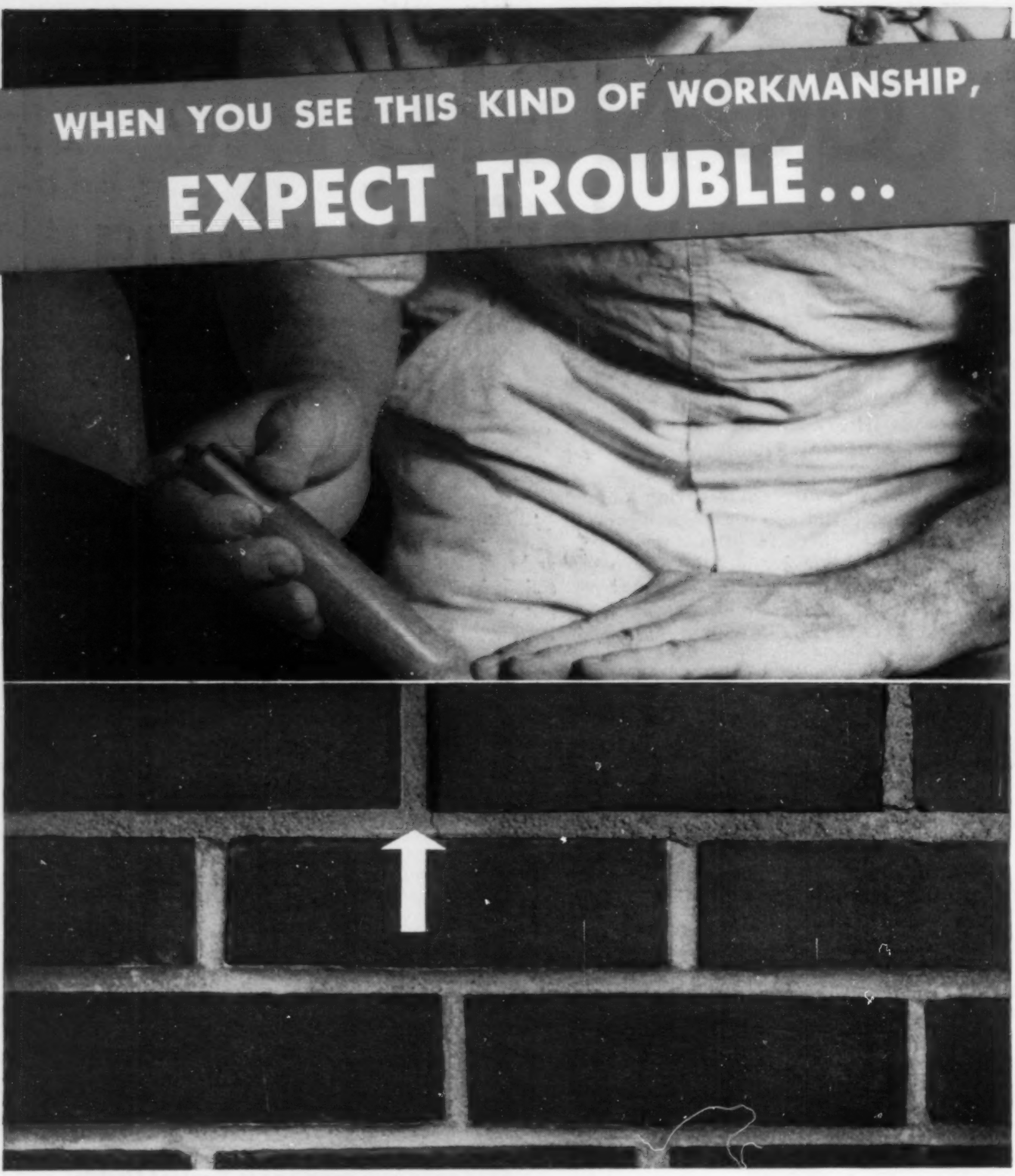
Please send Bulletin on

☐ G-E steel underfloor wiring systems
☐ G-E cellular-steel floor wiring system
☐ Enclosed is a description of my underfloor wiring problem. What do you suggest?

Name______________________________
Title______________________________
Company____________________________
Address____________________________

WHEN YOU SEE THIS KIND OF WORKMANSHIP,

EXPECT TROUBLE...



GOOD workmanship is one of the most important factors in preventing leaky brick walls.

Good workmanship includes wetting the brick, securing full head and bed joints, backplastering the face brick—*and laying the brick carefully to keep the bond. The position of the brick should never be shifted after the mortar has stiffened.*

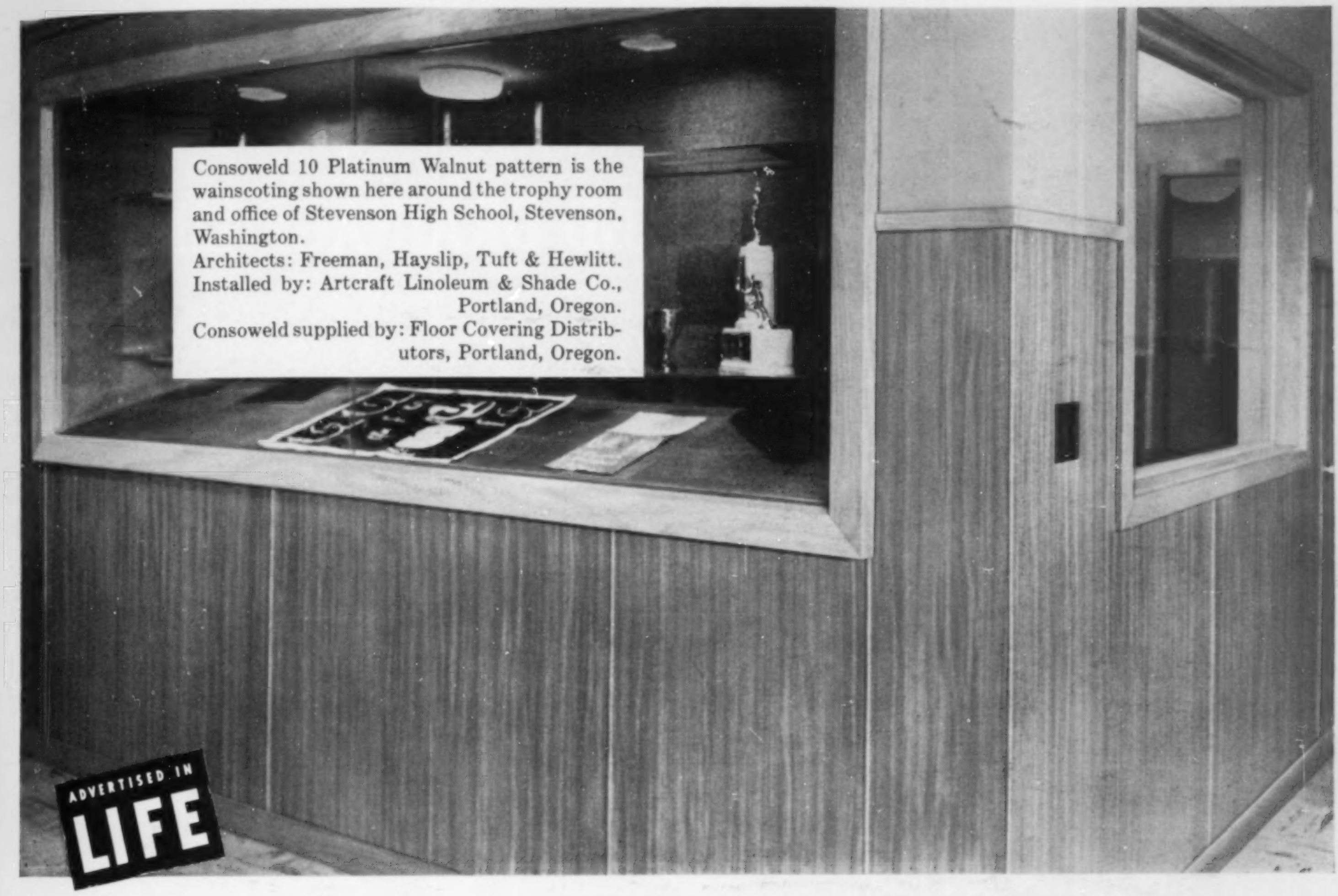
Expect trouble when brick are shifted or tapped into place after the mortar has stiffened. Cracks will result and the wall may leak.

Brixment mortar has high water-retaining capacity. It resists the sucking action of the brick. It stays plastic and workable longer. Brixment mortar therefore makes it easy for the bricklayer to lay the brick accurately, before the mortar has stiffened.

Brixment mortar has great plasticity, high water-retaining capacity and bonding quality, great resistance to freezing and thawing, and freedom from efflorescence. Because of this *combination* of advantages, Brixment is the leading masonry cement on the market.

BRIXMENT

LOUISVILLE CEMENT COMPANY, Incorporated, LOUISVILLE, KENTUCKY



Consoweld 10 Platinum Walnut pattern is the wainscoting shown here around the trophy room and office of Stevenson High School, Stevenson, Washington.
Architects: Freeman, Hayslip, Tuft & Hewlitt.
Installed by: Artcraft Linoleum & Shade Co., Portland, Oregon.
Consoweld supplied by: Floor Covering Distributors, Portland, Oregon.

Consoweld 10 on School Corridor Walls Will Save $200 A Year, Says Architect

In addition to the color, beauty, and durability that Consoweld wainscoting provides, the saving on maintenance alone will be around $200 a year, based on elimination of painting every three years, according to P. A. Hewlitt, the architect.

At Stevenson (Wash.) High School, the architects used about 7600 square feet of Consoweld 10, the extra-thick (1/10-inch) laminated plastic panels. This was installed directly over gypsum lath, with Consoweld's Twin-Trim matching mouldings at seams. A two-man team installed about 700 square feet per day. Men who installed the panels said that even though this was their first experience with it, they had no trouble whatever installing Consoweld—in fact, said "it was fun to install," and it required no bracing or shoring.

Consoweld 10 is a heavier grade of the same durable, easy-to-clean laminated plastic seen everywhere on quality dinette tables, countertops, and fine furniture.

Consoweld's exclusive new 5-foot-wide, 10-foot-long panel is ideal for wainscoting. Consoweld is available in a wide variety of color-tuned patterns and panel sizes, in both Consoweld 10 for vertical applications, and the standard 1/16-inch Consoweld 6 for desks, lunch counters, tables, and other applications. Get complete information—mail the coupon for details and name of nearest distributor.

CONSOWELD®
LAMINATED PLASTIC

Beautifully situated, the modern building of the Stevenson, Washington, High School is an excellent example of contemporary school design. Along with other modern materials, the architects specified Consoweld 10 for corridor wainscotings. Consoweld is easy to install, and its durable surface stands up under hard use, with no painting and minimum maintenance. It's wear-proof, waterproof, and student-proof.

MAIL THIS COUPON

Consoweld Corp., Wisconsin Rapids, Wisconsin AF-48

Please send me details on Consoweld 10 for school and other wall use, and name of nearest distributor.

Name ____________________

Firm ____________________

Address ____________________

City ____________ State ____________

Please check type of business

Architect ☐ Builder ☐ School ☐ Other ____________

GALVANIZED STEEL PIPE VENTS AND DRAINAGE LINES

Eggers and Higgins — Architects
George A. Fuller Company
— General Contractors

Used in the talked-about buildings and the sought-after homes of today.

For the impressive new Mutual Benefit Life Building in Newark, N. J. . . . subject of favorable comment in the architectural press and national magazines . . . *galvanized steel pipe* was used for vent and drainage lines!

This 10 million dollar, white limestone and green glass insurance company home office building represents the best in contemporary architecture as well as construction techniques and materials.

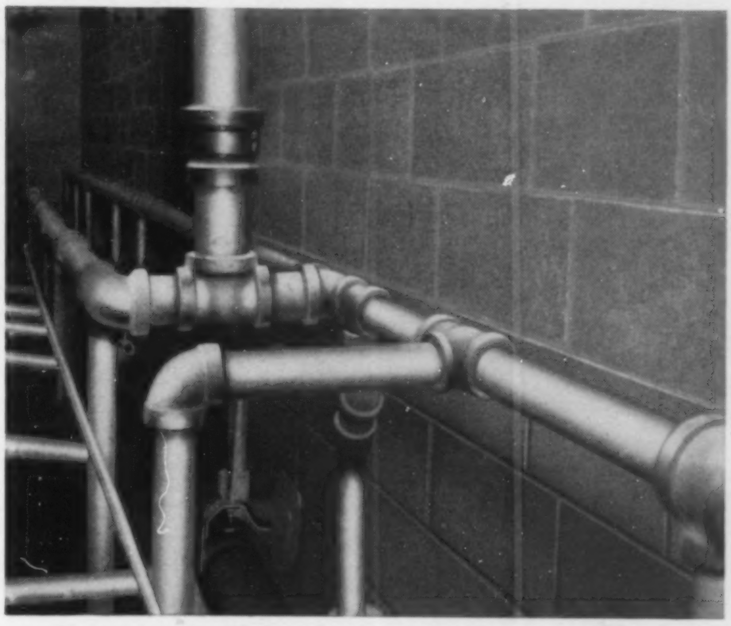
Again, *steel pipe was first choice* for the vital health lines of an ultra-modern structure because only *steel pipe* combines *all* the desirable factors of lowest material cost, unexcelled strength, acceptability in national plumbing codes, life expectancy equal to that of the building and is available everywhere through more than 6900 distributors.

For the same sound reasons, *galvanized steel pipe* that is used in today's most advanced multi-million dollar structures, is also the sensible selection for the vents and drainage lines of the nation's new homes.

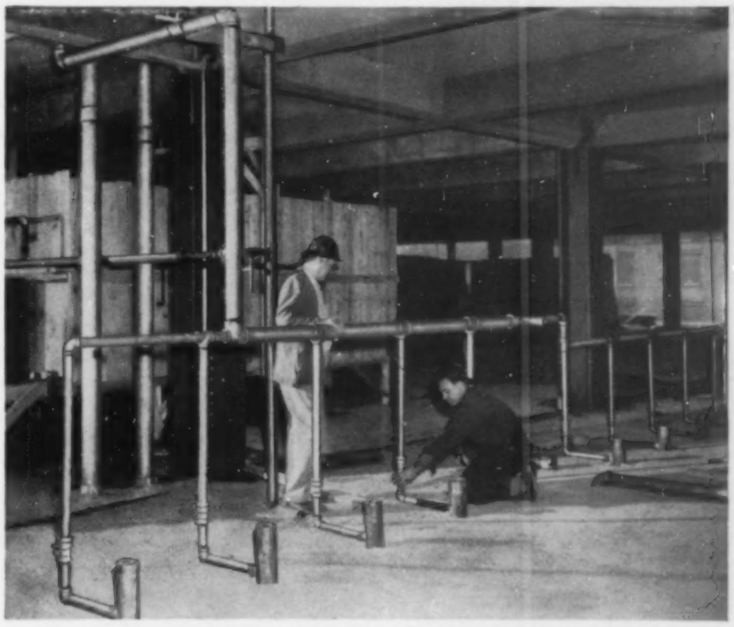
Always specify *galvanized steel pipe* vent and drainage lines for greatest satisfaction.

Only Steel Pipe gives *all* these advantages:

- Lowest cost with durability
- Strength unexcelled for safety
- Formable—bends readily
- Weldable—easily, strongly
- Threads smoothly, cleanly
- Sound joints, welded or coupled
- Grades, finishes for all purposes
- Available everywhere from stock



Proof of the integrity of galvanized steel pipe for drainage and vent lines is illustrated by its selection for so many modern new buildings, as in this installation at the great New York Coliseum.



For another of the largest and newest office buildings in the country, galvanized steel pipe was selected for the vent lines in the impressive Socony Mobil Building in New York City.

Steel Pipe is First Choice

Committee on
STEEL PIPE RESEARCH
AMERICAN IRON AND STEEL INSTITUTE
150 East Forty-Second Street, New York 17, N.Y.

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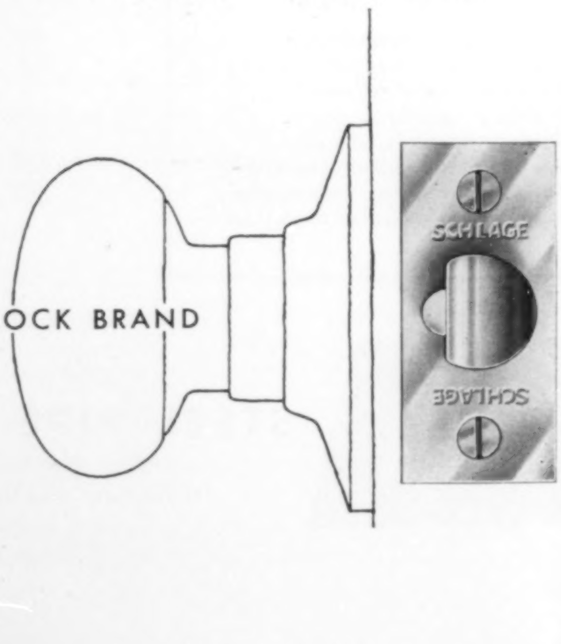
THE RECORD shows that our friends in the architectural profession have a high regard for the design and performance of Schlage locks.

With this in mind, we take pleasure in keeping you informed of our program of public advertising, since it has meaning for your profession.

In 1958 we are placing full pages of advertising in national consumer magazines like Better Homes & Gardens showing our products in their full color and beauty. One basic purpose is to give the public a clearer picture of quality design in locks and, in this way, to make your specification of Schlage more meaningful.

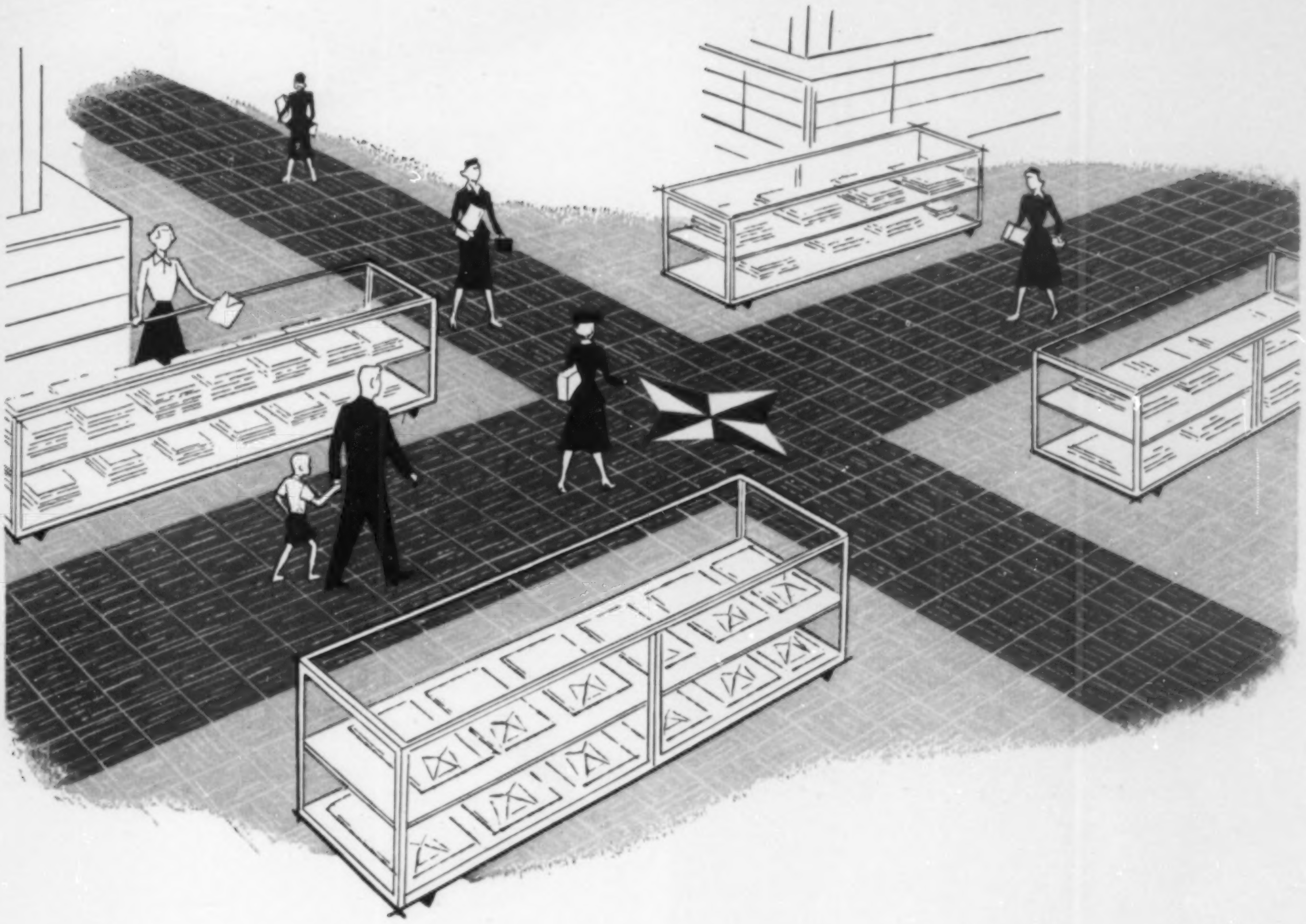
The Schlage name will thus acquire heightened prestige in commercial as well as residential building since many homeowners and home prospects, as you know, are also business executives who are commercial clients.

We invite your interest and comments on this program as it develops. It is, in its way, a public pledge to keep Schlage always first in quality and beauty. Schlage Lock Company . . . San Francisco . . . New York . . . Vancouver, B.C.



AMERICA'S MOST DISTINGUISHED LOCK BRAND

PROBLEM: HOW TO USE FLOORS TO DIRECT TRAFFIC



SOLUTION: USE VINA-LUX® with MICROMATIC VEINING

Store traffic "arteries" flow faster and more freely . . . produce more profits per square foot . . . when they are floored with Vina-Lux in *Micromatic veining*. The "straight-line" marbling in Vina-Lux creates an uninterrupted optical effect which actually "directs" traffic in a way no ordinary vinyl asbestos tile can equal.

Vina-Lux is a versatile tile that solves many floor problems. It's greaseproof and durable — slip-safe and easy to maintain. Solve *your* floor problems with this outstanding vinyl asbestos tile. Available in 31 colors and 4 styles. Samples and color chart are yours without obligation.

Colors shown: V-330, Riviera, and V-331, Sandalwood

AZROCK FLOOR PRODUCTS DIVISION

UVALDE ROCK ASPHALT CO. | 502A FROST BANK BLDG. • SAN ANTONIO, TEXAS

MAKERS OF VINA-LUX • AZROCK • AZPHLEX • DURACO

Natatorium, University of Michigan, Ann Arbor, Michigan
Architects: Giffels & Vallet Inc., L. Rossetti, Detroit, Michigan
Tile Contractor: The C. J. Page Tile Company, Detroit, Michigan

Romany-Spartan Tile **sparkles**

in new exhibition pool

Here, at the University of Michigan, is an outstanding example of forward thinking in competitive pool planning. Nothing has been overlooked in making this installation the country's finest. Its unique design—with the diving area adjoining, but outside the main tank—makes possible its uniform five-foot depth throughout the entire six-lane course. Both beauty and permanence were achieved through the use of Romany•Spartan small unit tile for runway and tank lining.

From natatorium to auditorium, classroom to kitchen . . . Romany•Spartan's wide range of colors, sizes and shapes, glazed and unglazed, offers tile for every purpose. For design help or information, call your nearby Romany•Spartan representative. United States Ceramic Tile Company, Dept. A-19, Canton 2, Ohio.

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UNITED STATES CERAMIC TILE COMPANY • THE SPARTA CERAMIC COMPANY

Wind-O-Washer

by

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The safe, economical way of servicing building exteriors; window-washing, tuck-pointing and building-washing. Every known safety feature provided, assuring protection to workers, building management and owners. Cleaning operations speeded up with attendant lower costs. Each installation specially engineered.

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ECONOMY ENGINEERING COMPANY, *Since 1901*
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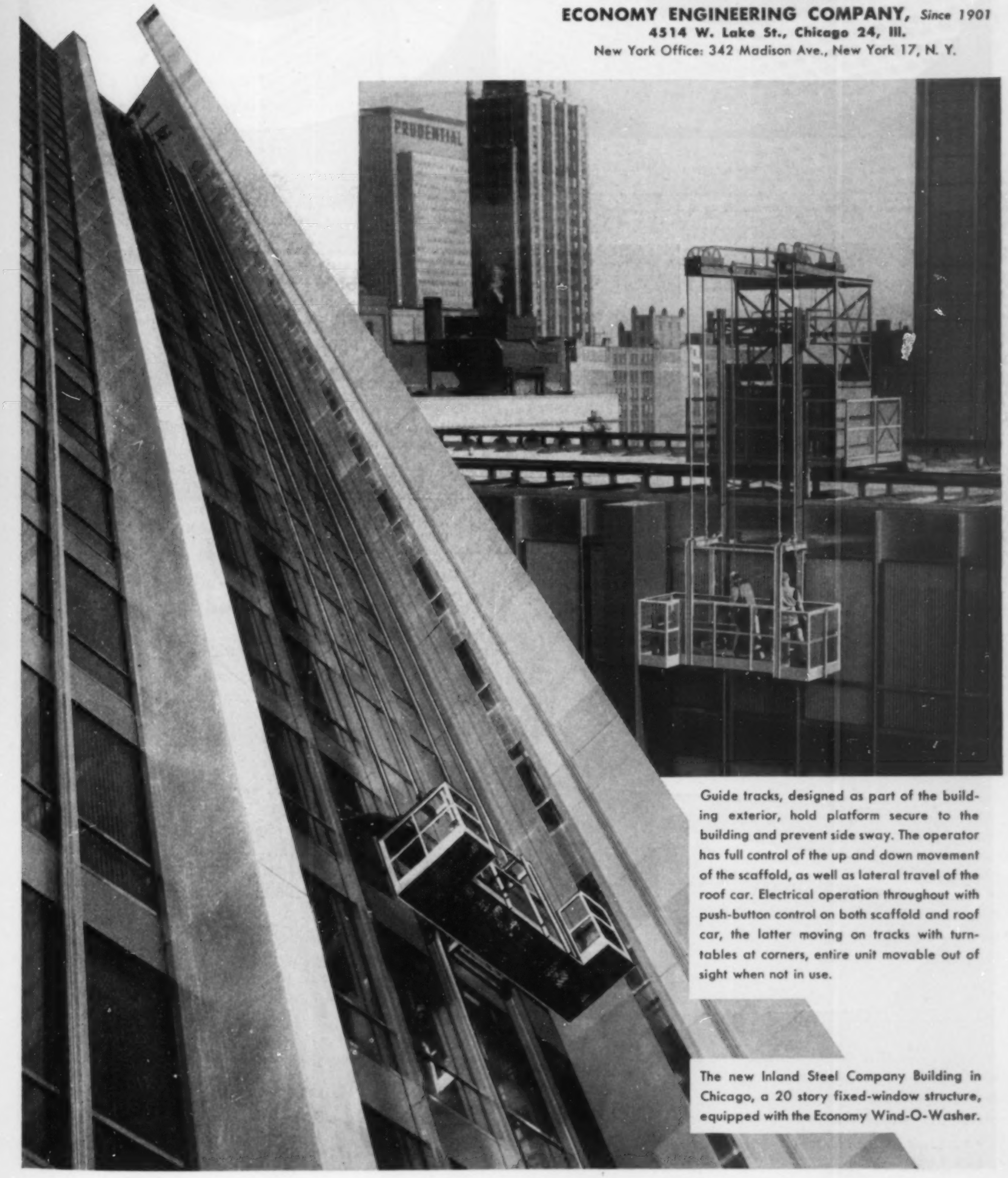
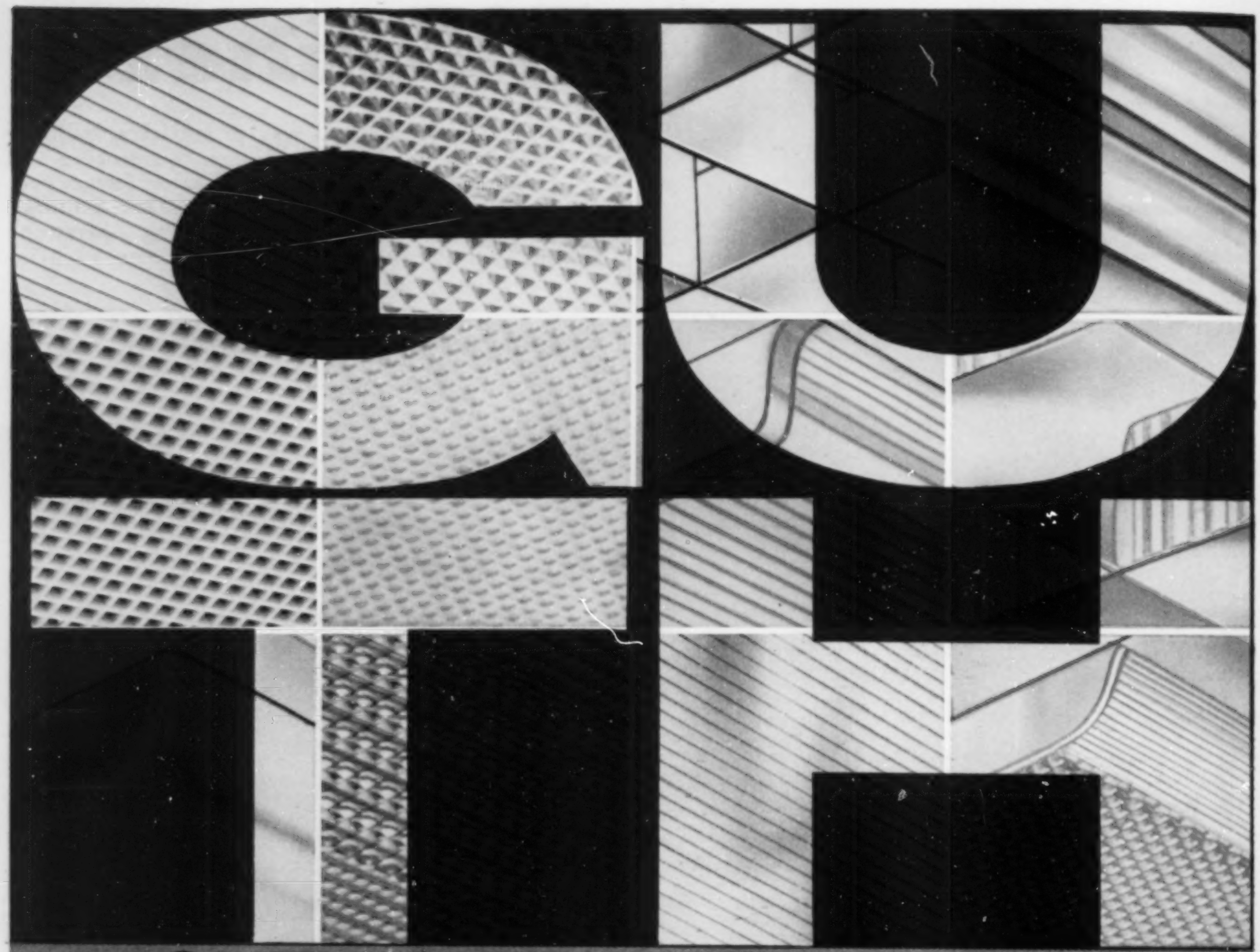


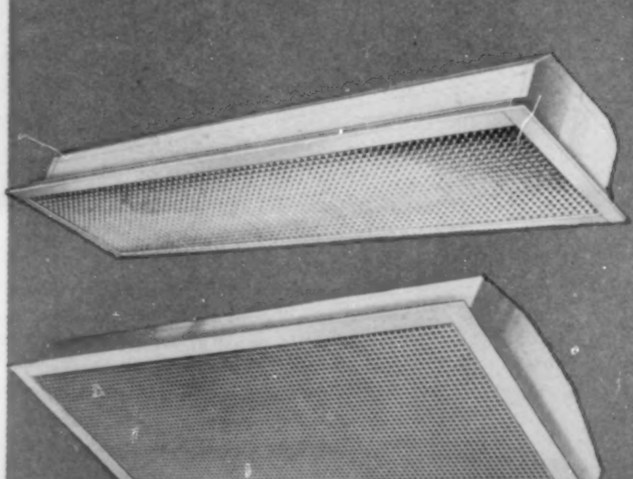
Guide tracks, designed as part of the building exterior, hold platform secure to the building and prevent side sway. The operator has full control of the up and down movement of the scaffold, as well as lateral travel of the roof car. Electrical operation throughout with push-button control on both scaffold and roof car, the latter moving on tracks with turntables at corners, entire unit movable out of sight when not in use.

The new Inland Steel Company Building in Chicago, a 20 story fixed-window structure, equipped with the Economy Wind-O-Washer.



GUTH LITE-BLOX TROFFERS

**the quality line
with unlimited variations**



Guth Lite-Blox troffers are *carefully engineered, precision made* and cover practically every type of troffer job you can name . . . for almost every ceiling suspension system:

Long or Short—Slim or Wide! 1′ x 2′, 1′ x 4′, 1′ x 6′, 1′ x 8′, 2′ x 2′, 2′ x 4′.

Broad Lamp Selection! 1, 2, 3 or 4 lights in 1′ models, 2, 3 or 4 in 2′ troffers.

Bottoms Galore! Featuring Prismoid GrateLite* or GrateLite Louver Diffuser†. 12 bottoms for 1′ models. Six for 2′ types.

Thin and Trim! New shallow depth. Light that's light to handle—and neat.

Labor Saving Installation! Complete units, ready to mount. One man can hang them. Modular lengths to fit most every ceiling system.

Speedier Maintenance! Bottoms can be hinged from either side for quick re-lamping and cleaning.

Guth

Specified and Stocked from Coast to Coast!

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**THE EDWIN F. GUTH CO.
ST. LOUIS 3, MISSOURI**

Trusted Name in Lighting Since 1902

* ®U. S. and Can. Pats. Pend.
† ®U. S. Pat. 2,745,001, Can. Patd. 1957, 539,245

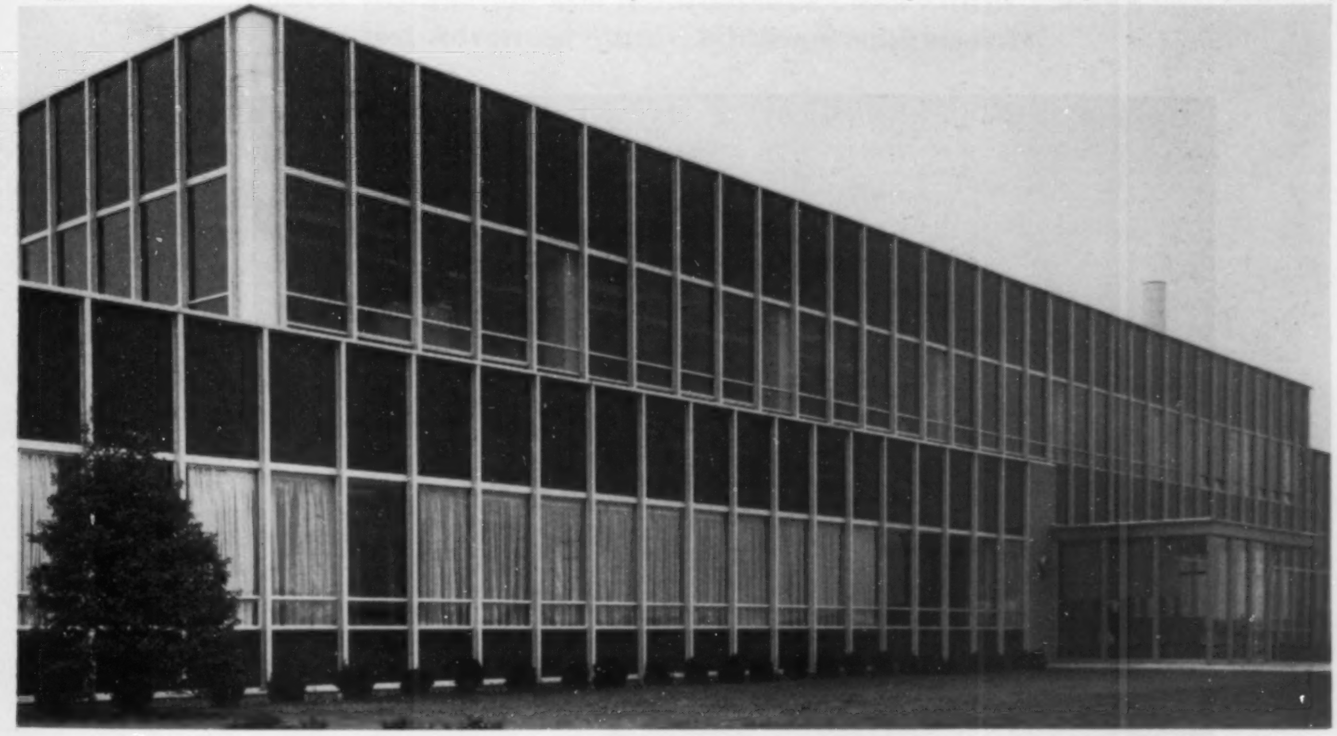
OWENS-CORNING BUILDING FACED WITH COLORFUL SEAPORCLAD LAMINATED PANELS

The *Owens-Corning Fiberglas Corporation* building in Barrington, New Jersey is still another outstanding example of the versatility afforded by SEAPORCLAD laminated curtain-wall panels.

Vivid color and distinctive design were achieved by utilizing 503 red SEAPORCLAD porcelain enameled steel panels, 3/8" in overall thickness. The components of each panel consisted of an 18-gauge porcelain enameled steel face, laminated to a stiffening core with a 24-gauge electro-galvanized steel back sheet. For insulation these laminated Seaporclad "sandwich" panels were backed with Fiberglas, a product of *Owens-Corning Fiberglas Corporation.*

For more information about Seaporclad, write for brochure 46.

ARCHITECTS: *Voorhees, Walker, Smith & Smith, New York City* • WINDOWS BY: *Michael Flynn Manufacturing Co., Philadelphia, Pa.*



For some job...somewhere...you can use

Seaporcel

ARCHITECTURAL PORCELAIN

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A. Simpson & Son, Ltd., Adelaide, South Australia
IN AUSTRIA: Kleiner & Fleischmann, Moedling, N. Oe.
IN BRAZIL: Rheem Metalurgica, S.A., Rio De Janeiro
IN CANADA: General Steel Wares, Ltd., London and Toronto, Ont
IN CHILE: Fabrica de Enlozados, S.A., "Fensa", Santiago
IN DENMARK: Glud & Marstrands Fabriker, Copenhagen
IN FRANCE: Societé Equipement Menager Japy, Paris
IN GREAT BRITAIN: Edward Curran Engineering, Ltd., Cardiff, Wales
IN HOLLAND: N. V. Emailleerfabriek "De Ijsel", Dieren
IN ITALY: S.I.L.T.A.L. & Filiberto Crespi, Milan
IN NORWAY: A/S Teknoglass, Moss
IN SWITZERLAND: Metallwarenfabrik Zug, Zug
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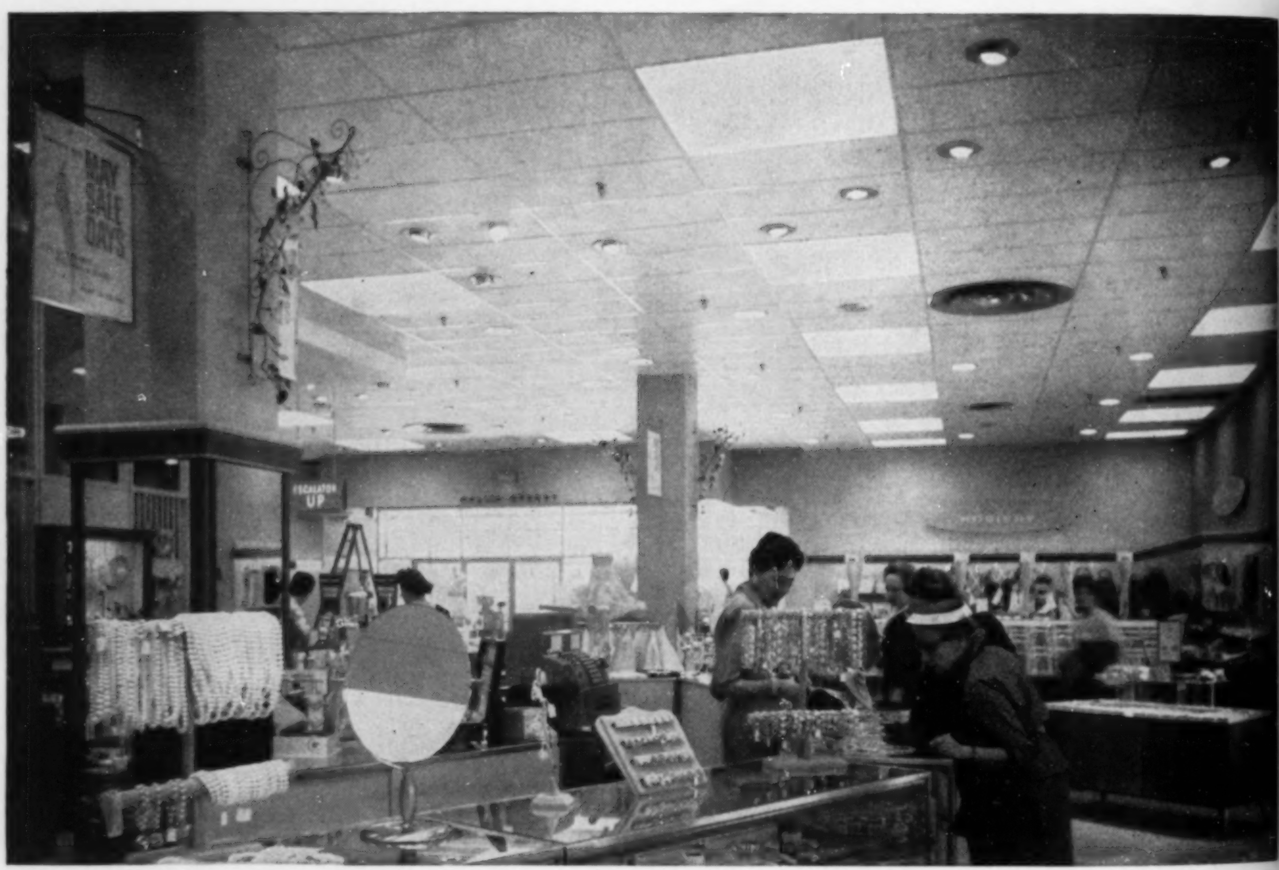
MERCHANDISING APPEAL-
EXEMPLIFIED BY



Lighting that *often* increases retail departmental sales as much as 300% is provided by Mainliner Luminaires, and featured *throughout* all departments of the great new Montgomery Ward store located at Portsmouth, Ohio.

New "must" for Store Lighting–

MAINLINER LUMINAIRES

Mainliner Exceptional Variety—Fine Detail of Design—Lowest Installation and Maintenance Costs Fulfill Today's Most Advanced Store-Lighting Requirements!

See how easily various models from the wide variety of Mainliner Luminaires are applied for both functional and decorative lighting, as well as for "Merchandising" lighting.

More and more—retailers are now *demanding* that their store lighting shall give them *every possible* merchandising advantage!

Most leading retailers now *know* that proper store-illumination can attract as much as 2½ times more traffic!—can increase the sale of displayed items 30% to 50%—can improve impulse-buying fully 5% overall! That store lighting *alone* can speed all selling-operations 20%—and eliminate returned-goods transactions 90%!

These facts are frequently cited in accounting for the spectacular "swing" to Mainliner Luminaires, for modern store lighting or re-lighting—along with the three major reasons for "specifying Mainliners"!

Mainliner Widest Variety! 4 mounting types, 6 basic sizes and 13 shielding styles fulfill *any* large-area lighting requirement!—permit more than 1000 *all different* combinations! Modular proportions and *dimensionally correct* construction, of Mainliner Luminaires, "mate" with any type of "squared" ceiling material!

Highest Quality Appearance! Mainliner door-frames have *mitered* corners. Latches are flush, almost indiscernible. The extremely "shallow" design of Mainliner units gives a "patterned" rather than a "boxy" appearance, when they are surface-mounted. And, a black stripe applied to the light-trap seat—*eliminates* the escape of light from around the door-frames of Mainliner Luminaires!

Save Installation Costs 3 Ways! Rugged and reinforced Mainliner construction eliminates "crimping" and "wobbling"—for *much* easier handling! Mainliners come *completely pre-assembled!* Doors are packed separately. Cartons simply "rip" open. Mainliners cut *all* job-planning—job-layout—and luminaire-handling time!

Mainliners are only 4⅞" deep! Easiest ever to position and mount! Recessed models include Flange-type, Grid-type and Snap-in Tee-Bar units. Surface-mounted units permit a semi-recessed appearance.

Mainliner doors, too, come pre-assembled—hinge and latch from either side. And, the *complete pre-wiring* of Mainliner Luminaires is *consistently* reported to *cut wiring-time in half!*

J-04434

Get *all three* superior advantages of Mainliner Luminaires—through your nearby Westinghouse Representative—through your own, local Westinghouse Distributor or write directly to Westinghouse Electric Corporation, Lighting Division, Cleveland, O.

Request a Mainliner presentation today!

Certified Lighting

YOU CAN BE *SURE*... IF IT'S

Westinghouse

The Finishing Touch
that ASSURES CLIENT APPROVAL!

FLOOR
HILLYARD
TREATMENTS
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Administrative Building, District of Rhone Delta, Marseilles, France

specify HILLYARD Wood Floor Treatments

to seal in Longtime Wear . . .
to finish your Interior Design . . .

Once your wood flooring is chosen, the initial treatment you specify is all-important.
This is the time to condition the surface to stand up under the traffic it will receive—to seal out dirt, moisture, decay, etc.—to seal in the full potential of wearability, appearance. This is the time to assure continued client satisfaction, with a surface that is easy, and economical, to maintain.
This treatment should also bring out the full beauty of wood and grain, as the decisive factor completing your interior design.
Specify a specialized Hillyard Wood Seal.
Specify a specialized Hillyard Wood Finish.

Wood is chosen for a very wide range of floors—in commercial, industrial, and office buildings—in schools, hospitals, churches, gymnasiums. No two of these floors have the same requirements for appearance and wear resistance. Ask your Hillyard "Maintaineer®" to help you choose treatments that are tailored individually to your floor. Ask him to survey all floors on your boards, recommend treatments, act as your "Job Captain".
Ask him for A.I.A. numbered files, with Architect's information and detailed instructions for contractors, for each major type of floor.

FLOOR HILLYARD TREATMENTS

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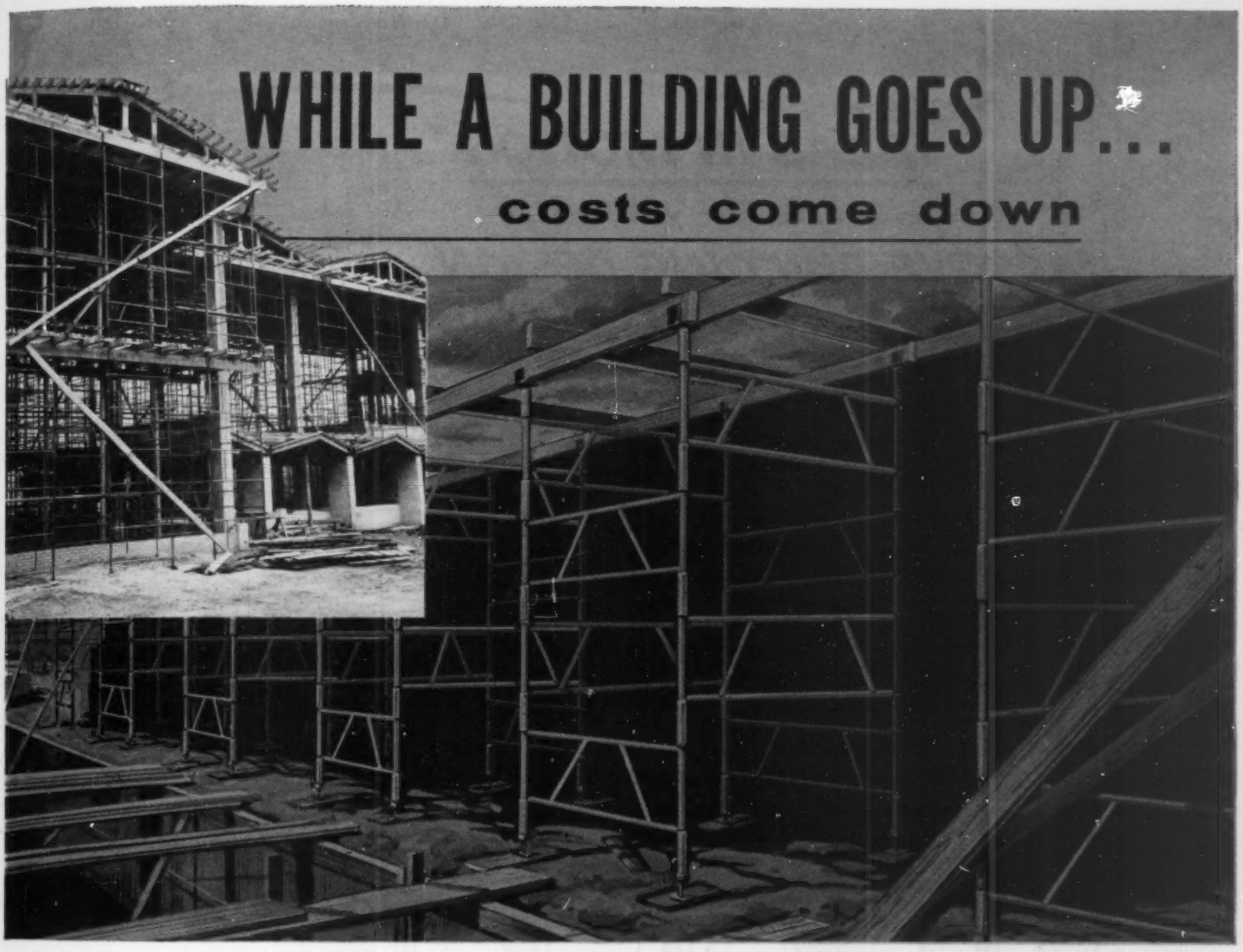
The Hillyard Maintaineer is
Your Expert Consultant,
"On Your Staff, Not Your Payroll"



Brainard 4S Engineered Shoring System

Now — a Shoring System especially designed and engineered to cut costs in the construction of reinforced concrete industrial and commercial structures of all kinds. When a job is on the drawing board you can plan construction savings for your client up to 40%, by specifying reinforced concrete structure built with Brainard's 4S Engineered Shoring System. This system is the most modern yet devised. Simplified—because combinations of shoring towers will handle almost any shoring problem. Safe and sturdy—because it is fabricated of high quality welded metal tubing, and speedy because its simplified slip-fit construction eliminates any need for bolts or other fasteners.

Brainard's Shoring System is made up of a minimum number of reusable parts that can be used and reused for greater savings.

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Griswold Street, Warren, Ohio
☐ Please send more information on Brainard's Engineered Shoring.
☐ I would like a representative to call.

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492A

Brainard Specialty Products

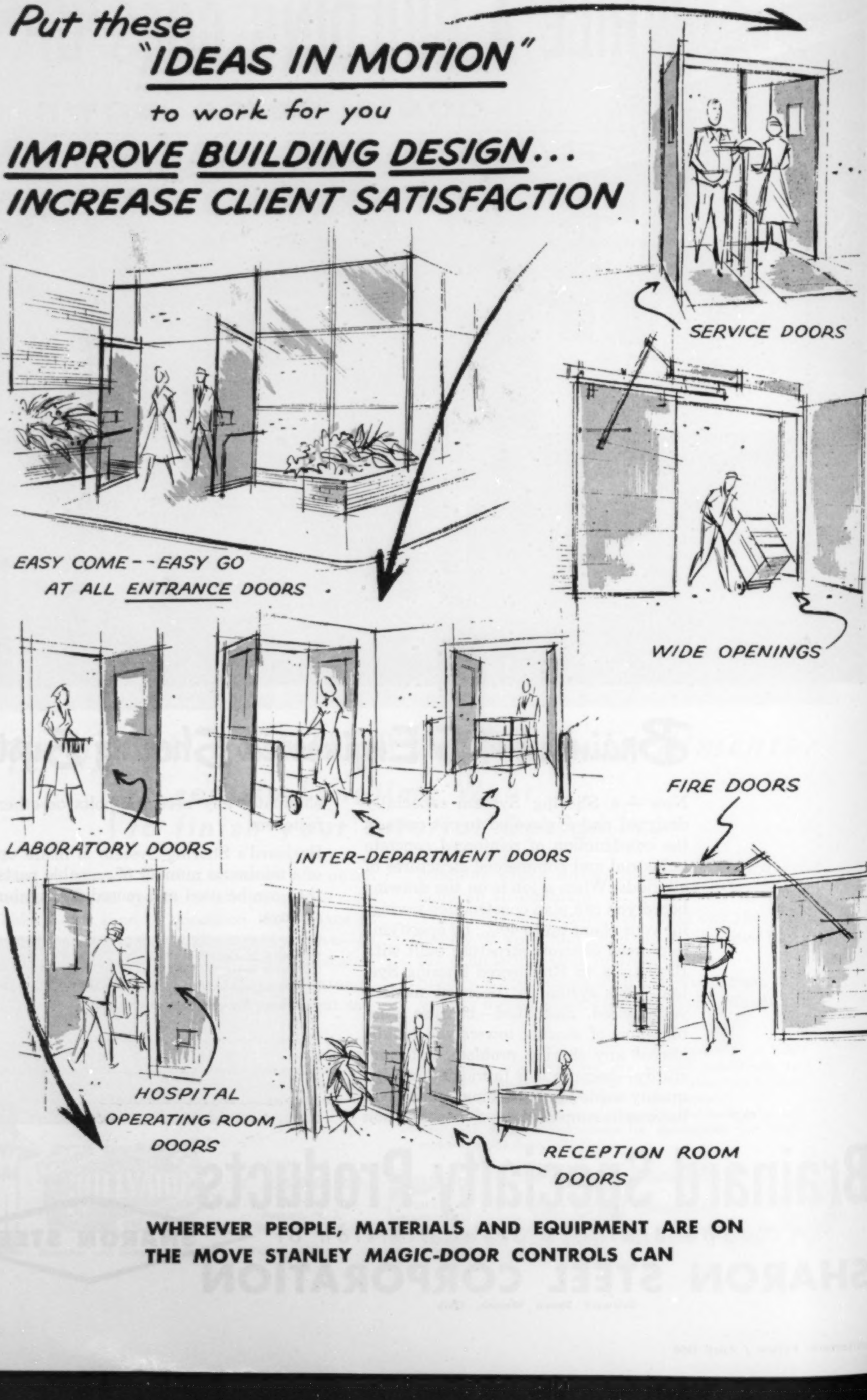
The Brainard Steel Division of **SHARON STEEL**

SHARON STEEL CORPORATION

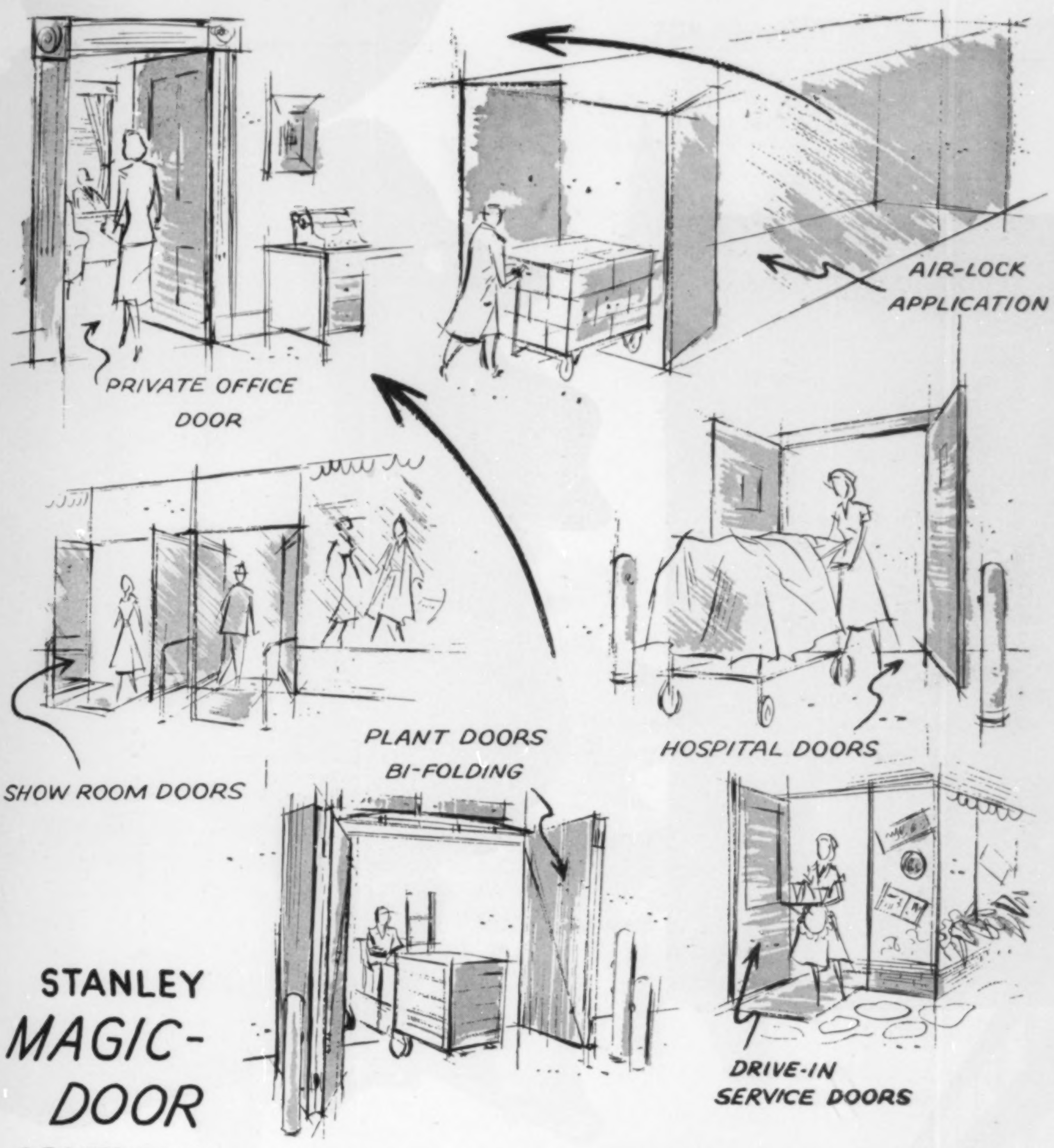
Griswold Street, Warren, Ohio

Put these "IDEAS IN MOTION" to work for you

IMPROVE BUILDING DESIGN... INCREASE CLIENT SATISFACTION


SERVICE DOORS
EASY COME--EASY GO AT ALL ENTRANCE DOORS
WIDE OPENINGS
FIRE DOORS
LABORATORY DOORS
INTER-DEPARTMENT DOORS
HOSPITAL OPERATING ROOM DOORS
RECEPTION ROOM DOORS

WHEREVER PEOPLE, MATERIALS AND EQUIPMENT ARE ON THE MOVE STANLEY *MAGIC-DOOR* CONTROLS CAN


PRIVATE OFFICE DOOR
AIR-LOCK APPLICATION
SHOW ROOM DOORS
PLANT DOORS BI-FOLDING
HOSPITAL DOORS
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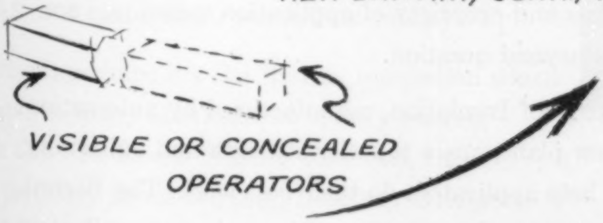
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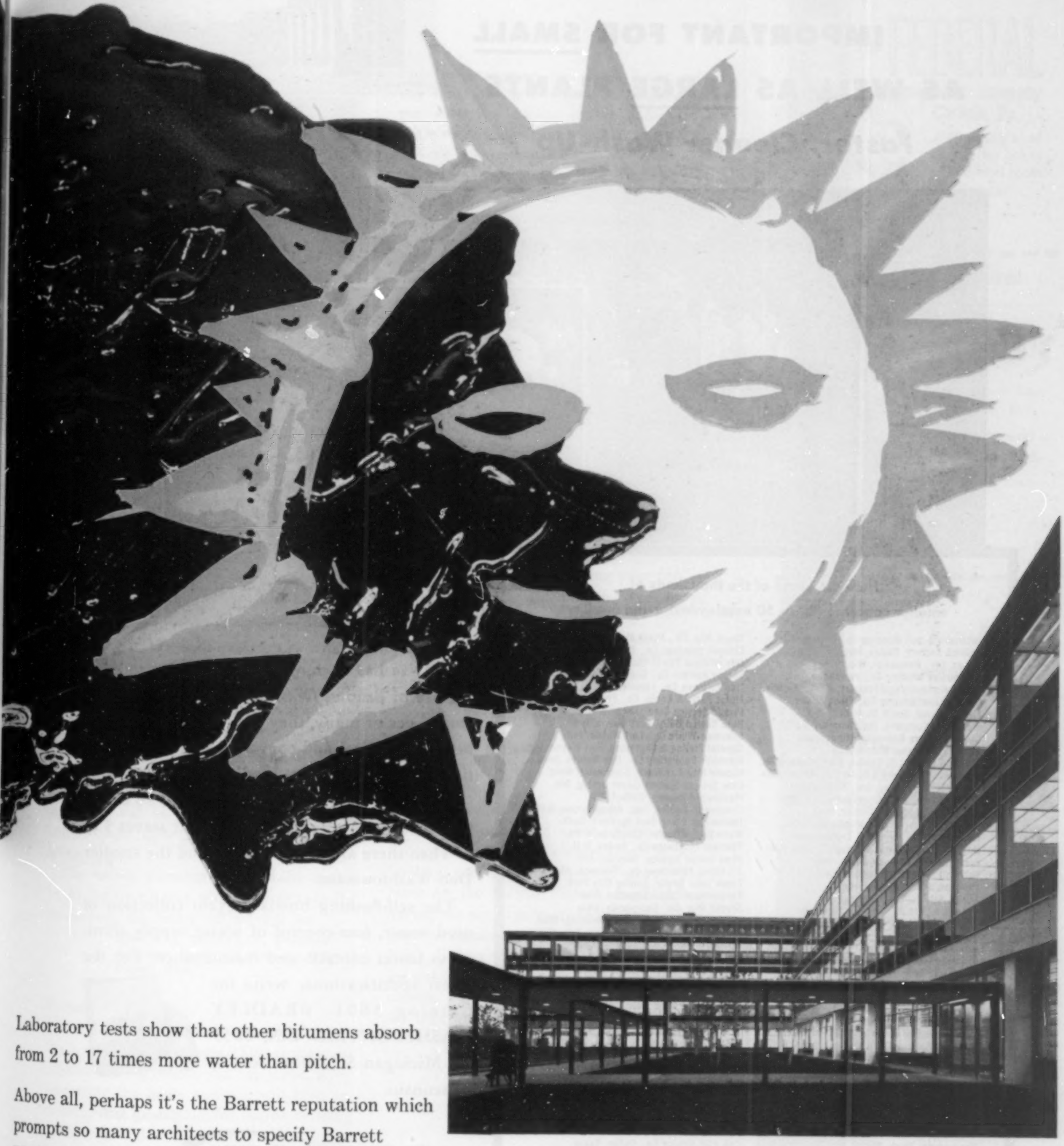

Laboratory tests show that other bitumens absorb from 2 to 17 times more water than pitch.

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Connecticut General Life Insurance Building; Architects: Skidmore, Owings & Merrill, New York City; General Contractor: Turner Construction Co., New York City; Barrett Roofer: Southern New England Roofing Co., Hartford, Conn.

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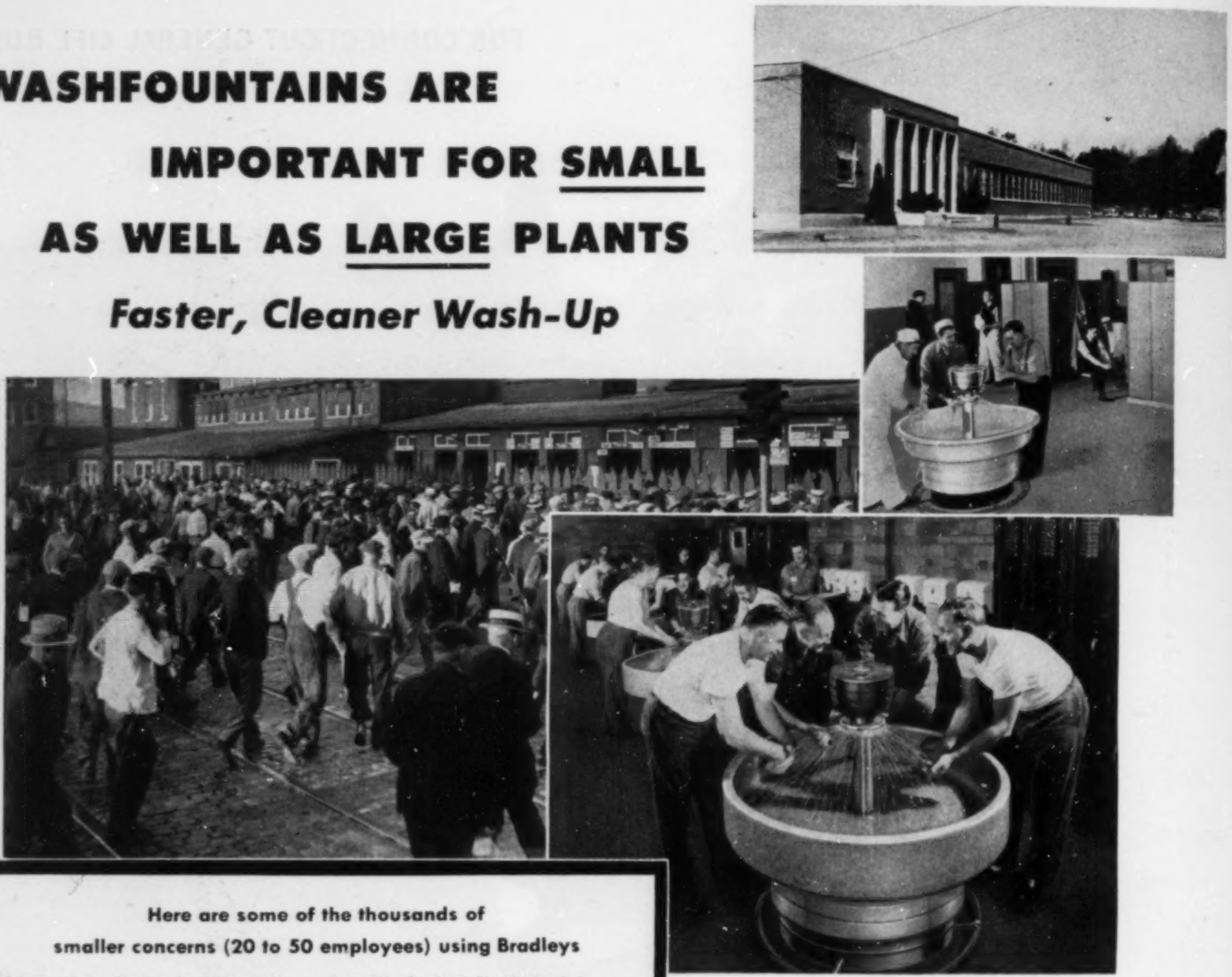

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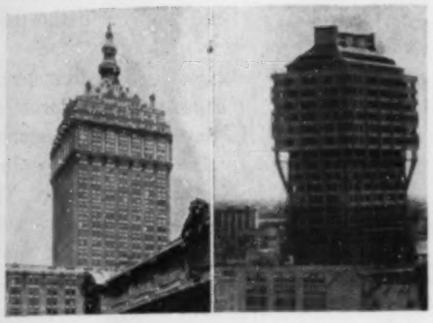
ENRICO PERESSUTTI



MILAN'S GRAND CENTRAL

Forum:

I am gratified to see that Milan now has, in the Torre Velasca (FORUM, January 1958), its own stripped-down version of Park Avenue's Grand Central building.

MORRIS KETCHUM JR.
Ketchum & Sharp, architects
New York, N.Y.

HOUSING POLICY

Forum:

Your article on housing policy (FORUM, March 1958) was a thoughtful and constructive piece of writing. I consider public housing in the same category as a public welfare department. Those individuals who require subsidy from the taxes of others in order to have shelter should be cared for but on a sensible basis.

Federal participation in housing, urban renewal, and other similar programs should be diminished over the years so that states and cities will be required to assume more and more of their fair share of responsibility.

The sooner government generally ceases to do for its citizens what they can do for themselves, the better off we will be.

HENRY J. SULLIVAN, *president*
American Society of Planning Officials
Detroit, Mich.

Forum:

I am bitterly opposed to increasing the limits on FHA mortgages. This is the most inflationary suggestion you can make. Keep increasing the limits and you will keep increasing the price paid for usable building plots, you will keep pushing people into higher and higher priced houses that very few people can now afford to buy. Anybody requiring more than a $20,000 mortgage should obtain a conventional uninsured mortgage.

I am also bitterly opposed to allowing interest rates to rise. Any time interest rates on mortgages get above 5 per cent, you can look for a decline in housing and particularly a decline in the housing for the great middle-income group.

Keep the responsibility for renewal a federal one. The political buck-passing down to local communities is a nice political pork barrel—more administrators, more staff, more programming. The federal government should pay the bill and call the terms.

THOMAS P. COOGAN, *president*
Housing Securities Inc.
New York, N.Y.

OPEN LAND, WIDE HORIZON

Forum:

"The City's Threat to Open Land" (FORUM, January 1958) is an exceptionally clear piece of analysis and thought. In view of city expansion in almost every state, this statement of the problem of regional planning is particularly timely.

Many thanks for expanding your field of interest and thus widening the horizons of your readers.

PHILIP N. YOUTZ, *dean*
College of Architecture and Design
University of Michigan
Ann Arbor, Mich.

THOUGHT DENTS

Forum:

Your whole February issue is full of imagination and good sense. "The City—Economic Problem Number One" is certainly a consistent and cogent story. The piece on the bullish outlook for building during the next ten years will make quite a dent on thinking. If anyone believes that Miles Colean's statement is wild—and I am not one of these—give him Keynes' pat remark, "Words ought to be a little wild, for they are the assaults of thought upon the unthinking."

LUTHER GULICK, *president*
Institute of Public Administration
New York, N.Y.

CONGRESS HALL DEBATE

Forum:

I enjoyed the article on the Berlin Congress Hall debate (FORUM, January 1957). Frei Otto's points were well taken and

continued on page 68

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Announcement
The FEDERAL
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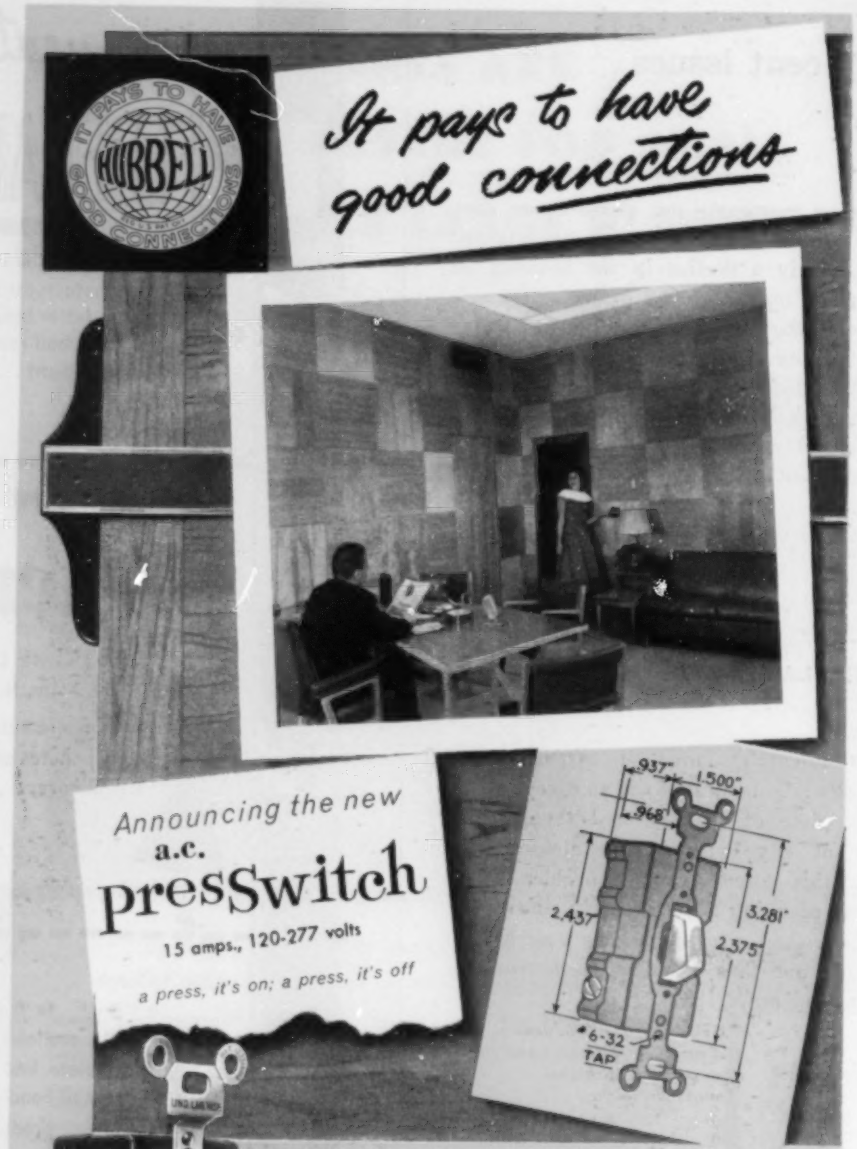

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should provoke some new thinking on the part of architects who are today battling the problem of structural exhibitionism. I could not help associating what I read in the article with certain problems or considerations of the pure sciences (in particular, mathematics), and drawing some esthetic parallels which might appeal to the theoretic nature in some architects.

In the construction of a logical structure or the "proof" of a mathematical problem, conclusions will follow from basic assumptions influenced by the rules of procedure permitted by the system in question. The more directly logical and ingenious such development is, the "cleaner," more "beautiful" will be the possible "proofs." It is not uncommon to hear scientists speak of such beauty when describing a system or a whole complex of systems. This is the realm of the esthetic in which all of the arts and the pure sciences dwell.

In the case of the Berlin Congress Hall it is distressing that inconsistencies existing between the basic architectural assumptions and the resulting architectural-structural form rob it of its "cleanliness," or "purity." The apparent structural system is not exactly true in principle. In hanging the entire outer perimeter of the shell from the inner column ring the theoretic beauty of a tension roof is defeated. If, as Architect Stubbins states, other requirements did not allow for the realization of the principle as initially conceived, then, as he also points out, more than one solution remains to any specific problem, and probably another approach should have been tried. The point I am making, or that Frei Otto makes, may be derided by some as too "abstract" for practical consideration. But, is not the concept of beauty itself an "abstract"?

EDWARD COLBERT, *architect*
Mathematics Department
Tulane University
New Orleans, La.

ART-SCIENCE CRISIS

Forum:

As an architectural student, I found it indeed gratifying to read your January editorial in which you call attention to the crisis in art and science that confronts us. You say: "The seer in art and the seer in science must now have equal voice with the best managerial talents in our industrial society, or this civilization faces self-destruction."

In a society that seems saturated with materialism and cultural shallowness, the aspiring designer and builder ponders the fruitfulness of the time, money, and effort that he is investing in college. Your edi-

continued on page 72

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Architects: Thos. W. Williamson and Victor H. Loebsack & Assoc., Topeka
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Typical classroom, showing McQuay floor type Seasonmaker air conditioning units.

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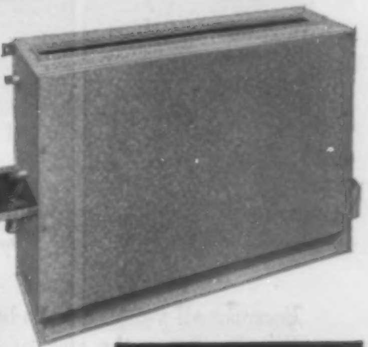

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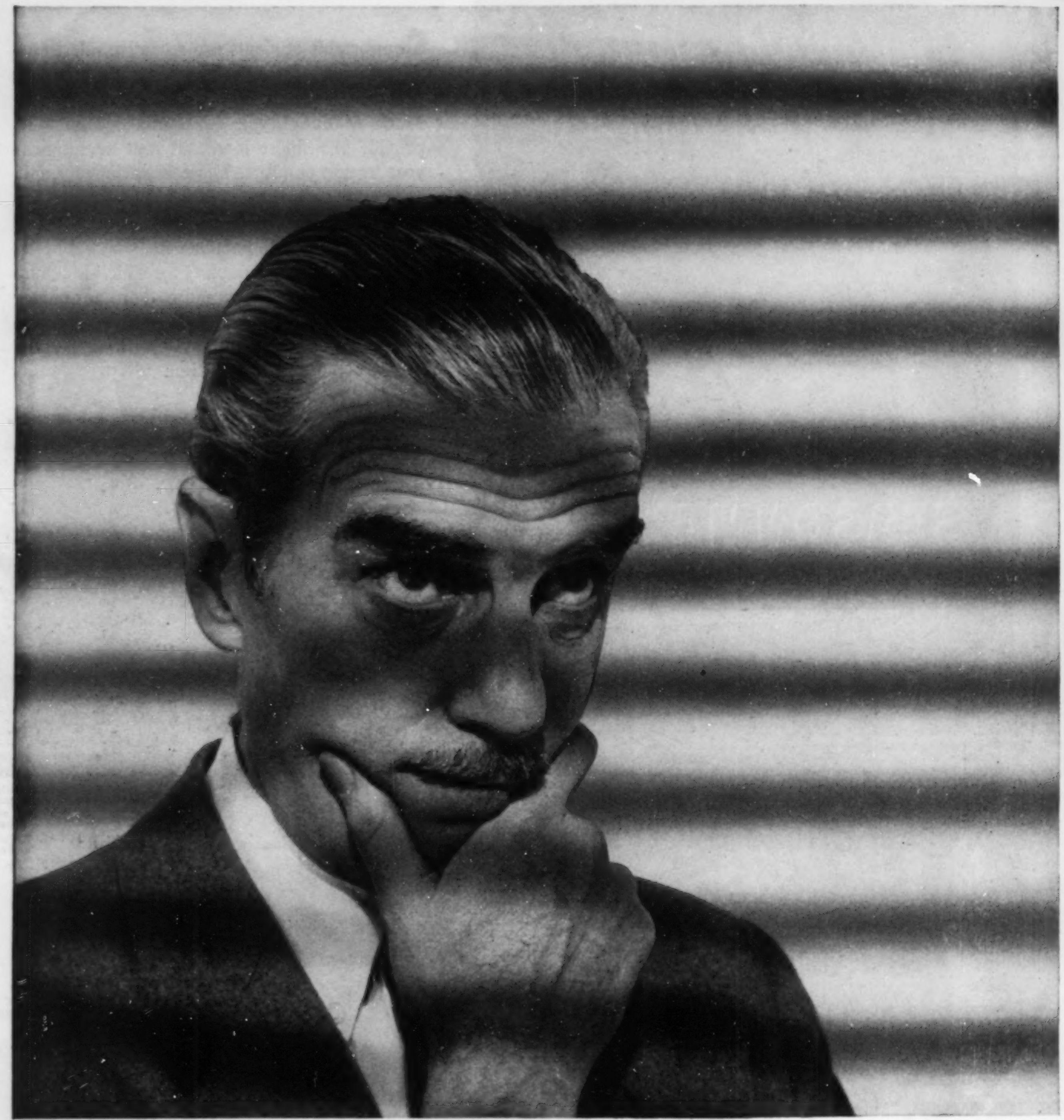

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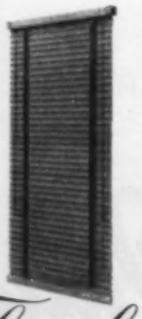

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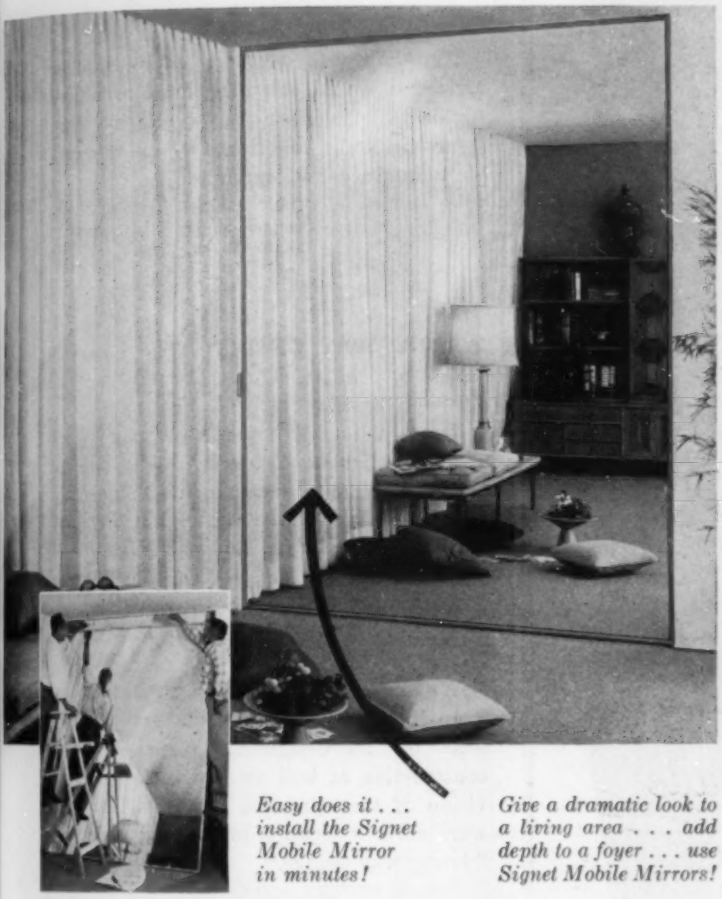

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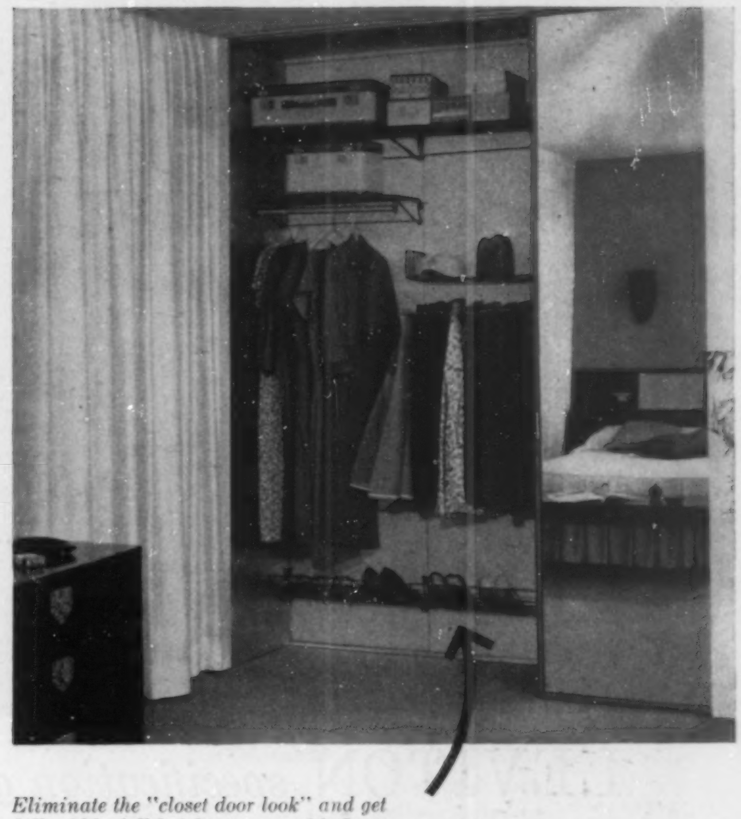

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torial did much to reassure me that the investment is not fruitless—that my prospective field does not share its society's complacency.

W. PERRY CHAPMAN
Cornell University
Ithaca, N.Y.

ACCENT THE PHILOSOPHICAL

Forum:

I am happy to see in recent issues some articles I would call directional or philosophical, or in other words, not just concerned with the practical. I hope this can be maintained and extended.

JOHN CARDEN CAMPBELL
Campbell & Wong, architects
San Francisco, Calif.

WRONG WAY CREDIT

Forum:

Your article "Canada's Wrong Way Bridge" (FORUM, February 1958) implies that the bridge in question was designed by the consultants of the Burlington Skyway. As a matter of fact, this particular overpass is about 4 miles from the nearest Skyway abutment and 3½ miles from the beginning of the so-called approach contract.

We and our associate, Dr. P. L. Pratley, were the Skyway consultants and responsible for its design and supervision of construction as well as construction supervision of the approach contracts. But we were never associated in any way with the "wrong way bridge."

W. E. HICKEY, *vice president*
Foundation of Canada Engineering Corp., Ltd.
Toronto, Canada

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Architect: Gordon C. Pierce, Greensburg, Pennsylvania
General Contractor: L. P. Wineman, Greensburg, Pennsylvania

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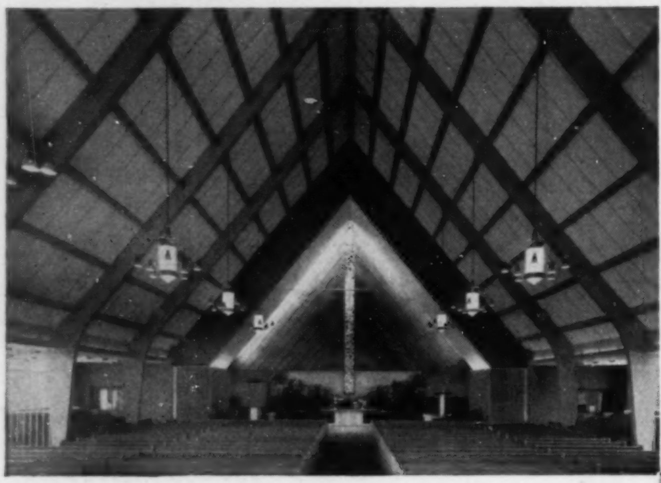

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Architects: Hoffman & Crumpton, Pittsburgh, Pa.
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Good acoustics go hand in hand with good appearance in this modern house of worship. Tectum decks play an important part in holding costs to appropriated funds, as these economical panels are laid directly over secondary framing members without need for further insulation, acoustical treatment or sheathing. Textured Tectum decks are warm and inviting, and audience appreciation of the services is greatly improved.

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Engineers: Anderson-Nichols & Company, Boston, Mass.
Architect: Earl M. Harvey, A.I.A., Boston, Mass.
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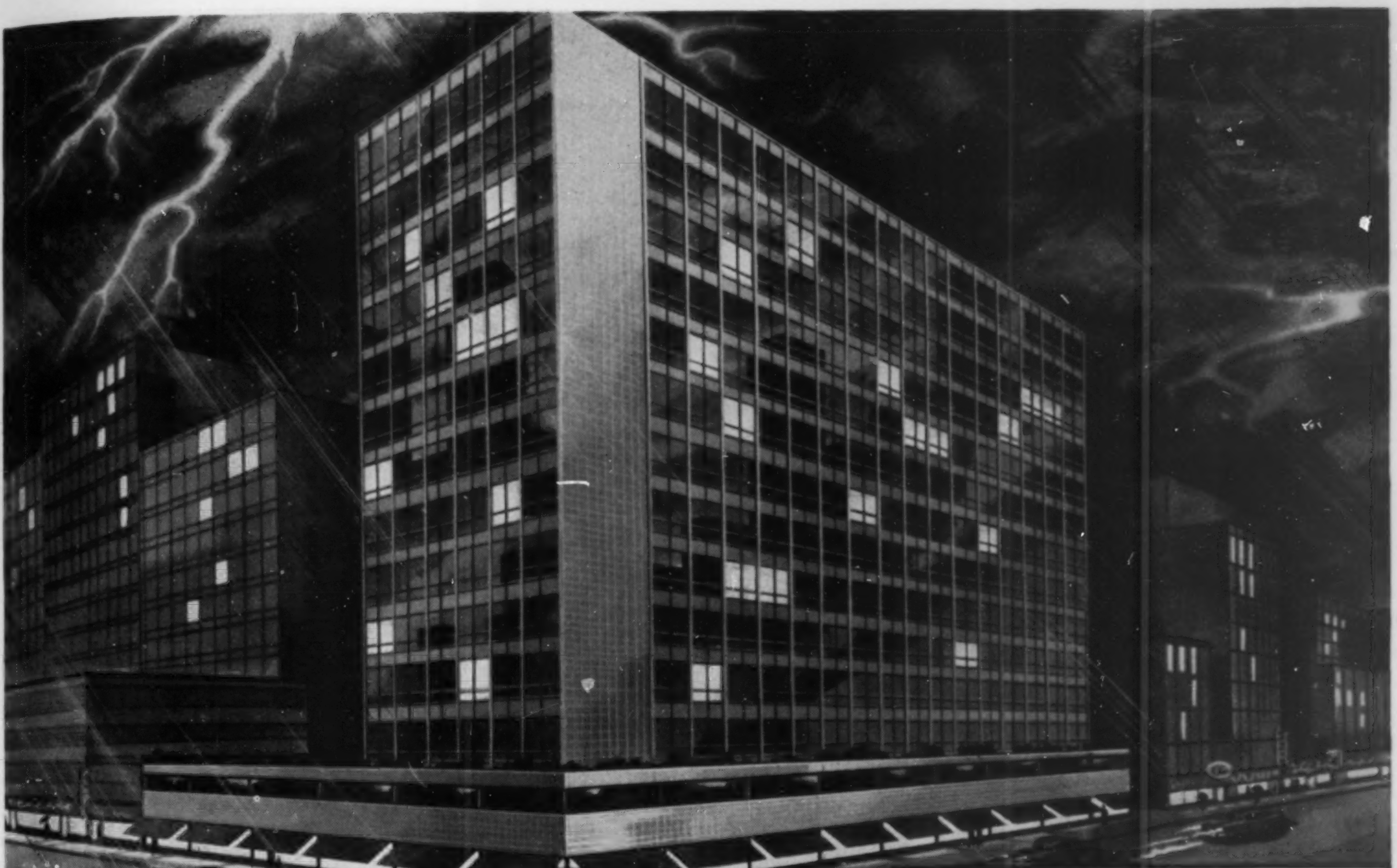

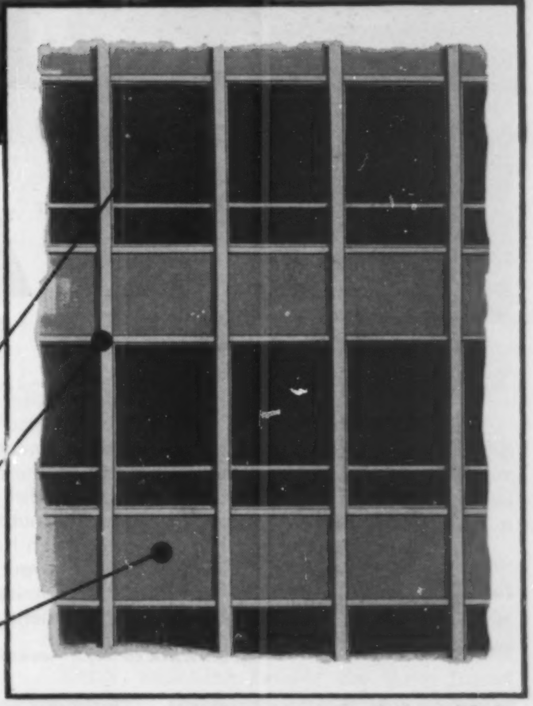

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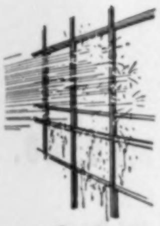

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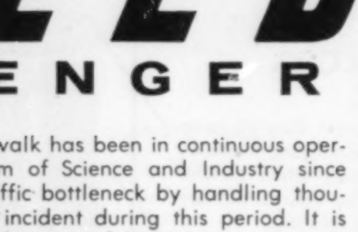

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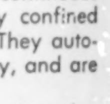

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Cullman seeks more funds for Brussels Fair; Architect Stone in the public limelight

LIFE—ALLAN GRANT

CULLMAN

Tobacco Tycoon **Howard S. Cullman** was reappointed to another two-year term as honorary chairman of the Port of New York Authority a few weeks ago, but he had little time to sit back and contemplate his 30 years on the authority. He was too busy battling a Congressional committee on behalf of the U.S. exhibit at the Brussels World's Fair which opens the middle of this month. Ever since he was appointed U.S. Commissioner General for the exhibit nearly two years ago, Cullman has been scrabbling for funds to build the $5 million pavilion—designed by Edward D. Stone—and the exhibits to go in it. But despite Cullman's most recent efforts, Congress still has not appropriated the full $15 million that had originally been requested by the State Department. The latest hearings squeezed another $2 million out of Congress, making a total of $14.4 million for both the building and the exhibits.

MARVIN RAND

STONE

LIMELIGHT AND FILIGREE

During the past year, probably no American architect has been as frequently in the public eye as **Edward D. Stone** of New York. His designs for the U.S. Embassy in New Delhi, India, the U.S. pavilion at the Brussels Fair, and the new Stuart Co. plant in Pasadena, California (page 124) seem to have caught the fancy of the times. Stone did not originate the pierced screen mode but made the style his own. He is now being flattered by a rash of imitations employing his airy handling of lightweight metal and masonry filigree to decorate basically orthodox shapes. To the heap of honors he has garnered in the professional world, Stone recently added a membership in the exclusive (250 member limit) National Institute of Arts and Letters. But besides this recognition from artists and his own confreres, Stone has recently attained an eminence that few architects ever reach; he has become known to a wide audience of the American public.

Stone, perhaps more than any other architect except Frank Lloyd Wright, has cracked what has been called the "ignorance barrier" between the great mass of Americans and the architectural profession. In recent months such magazines as TIME and *Vogue* have published feature stories on Stone, his buildings and his home. But the crowning public accolade for the 56-year-old architect came when he was recently visited by Ed Murrow's *Person to Person* TV show on CBS—he was the first architect ever visited by the popular interview show. Looking somewhat nervous alongside his composed, petite wife, Maria, Architect Stone showed his TV interviewer around his remodeled Manhattan house. When asked about the masonry filigree that covers the front of the house from basement to roof, celebrity Stone looked out at an estimated 20 million TV watchers and explained, "Oh, it allows us to look out, but no one can look in."

LIFE—MARK KAUFFMAN

MR. KILLARNEY CALLS IT QUITS

The man in the palm beach hat riding in the Irish jaunting car (above) has for the past year and a half been fondly referred to by Irishmen as "Mr. Killarney." His name is **J. Stuart Robertson**, and usually he deals in Florida real estate. But about 18 months ago he bought 8,500 acres of choice Irish land in Killarney, County Kerry, including two of the three famed Killarney lakes, a small handful of crumbling abbeys, a castle, and a piece of the Southwestern Ireland town of Killarney itself. Robertson reportedly paid to the heir of the last Earl of Kenmare about $300,000 for the area.

Robertson earned his nickname of "Mr. Killarney" when he announced his intention of developing the land on a modest scale, preserving its storied countryside pretty much as it is. He planned to build about 20 thatched-roof, Irish-style ranch homes of 11 rooms

continued on page 79

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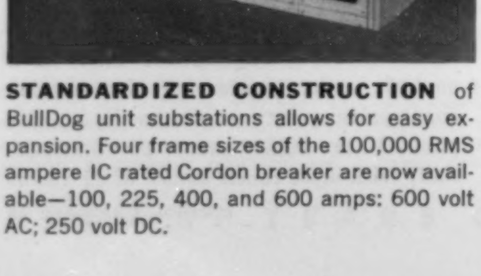

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each to sell for around $50,000 apiece. And he was going to build a private club similar to Florida's Boca Raton Club, of which he was executive vice president until he engineered the club's sale to **Arthur Vining Davis** a few years ago. But a few weeks ago, Robertson resigned as president of Killarney Estate, Ltd., sold his interest "for less than I paid for it" to a 14-man syndicate including Industrialist **Ignatius Aloysius O'Shaunghnessy** (chairman of Globe Oil Co. of St. Paul) and Florida Builder **Frank J. Rooney.**

Robertson's disenchantment with Killarney so far as his ambitious scheme is concerned came last year when several groups of visitors indicated a preference for the faster-moving life on the East Coast of Ireland, nearer Dublin. As a result, Robertson has bought 250 acres near Dublin at Connaught, and will lease another 10,000 acres nearby for hunting and fishing. He has set up a share-the-Ould Sod financing scheme such as he had for Killarney and plans to invite about 30 interested investors to form a syndicate for the East Coast development.

Robertson's successors still plan to develop Killarney along the lines Robertson had laid out.

NEW JOBS

KRISTOF STUDIO

David D. Bohannon has been elected president of the Urban Land Institute in Washington, D.C., succeeding **Charles E. Joern.** Bohannon is a past president of the National Association of Home Builders. . . . **Paul Oppermann** resigned his job as City Planning Director of San Francisco to become executive director of the Northeastern Illinois Metropolitan Area Planning Commission, which embraces a six-county area around Chicago.

MORE AIA NOMINATIONS

Nominations for officers to be voted on at the July convention of the American Institute of Architects are still coming into AIA's Washington office (FORUM, January 1958). The nominating petitions are not restricted to the presidency; so far there are at least two nominations for each of the top five AIA posts, insuring some lively balloting at Cleveland this summer. Here are the nominees so far: for president, **John N. Richards** of Toledo and **Alexander C. Robinson III** of Cleveland; for first vice president, **Albert S. Golemon** of Houston and **Philip Will** Jr. of Chicago; for second vice president, **Austin W. Mather** of Bridgeport, Connecticut, **Herbert C. Millkey** of Atlanta, and a newcomer to the lists, **Henry L. Wright** of Los Angeles; for secretary, **Louie L. Scribner** of Charlottesville, Virginia and **Edward L. Wilson** of Fort Worth; and for treasurer, **Gerson T. Hirsch** of Pleasantville, New York and **Raymond S. Kastendieck** of Gary, Indiana.

RICHARDS

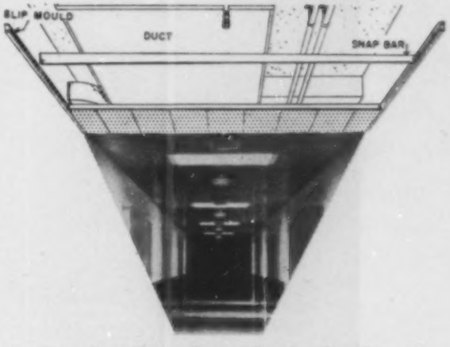
ROBERT H. BLANCH

ROBINSON

DEATHS: **Philip L. Goodwin** died at the Tucson, Arizona Medical Center at the age of 72. He and **Edward D. Stone** (see page 77) were the architects of the Museum of Modern Art in New York City, and Goodwin was a trustee and former vice chairman of the museum's board.

One of the best-known structural engineers in the U.S., **Walter H. Weiskopf,** died in New York of leukemia at 59. Weiskopf was a partner in the engineering firm of Weiskopf & Pickworth of New York, which has served as consultants to the architects of some of the best-known buildings in the country. These include Lever House and the Fifth Avenue branch of the Manufacturers Trust Co. in New York, the new Senate Office Building in Washington, and the Connecticut General Life Insurance Co. building near Hartford, Connecticut.

OF ALL CEILINGS:
The first . . .



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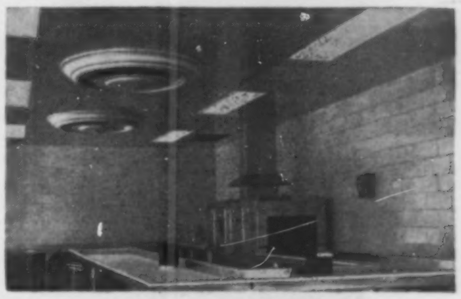

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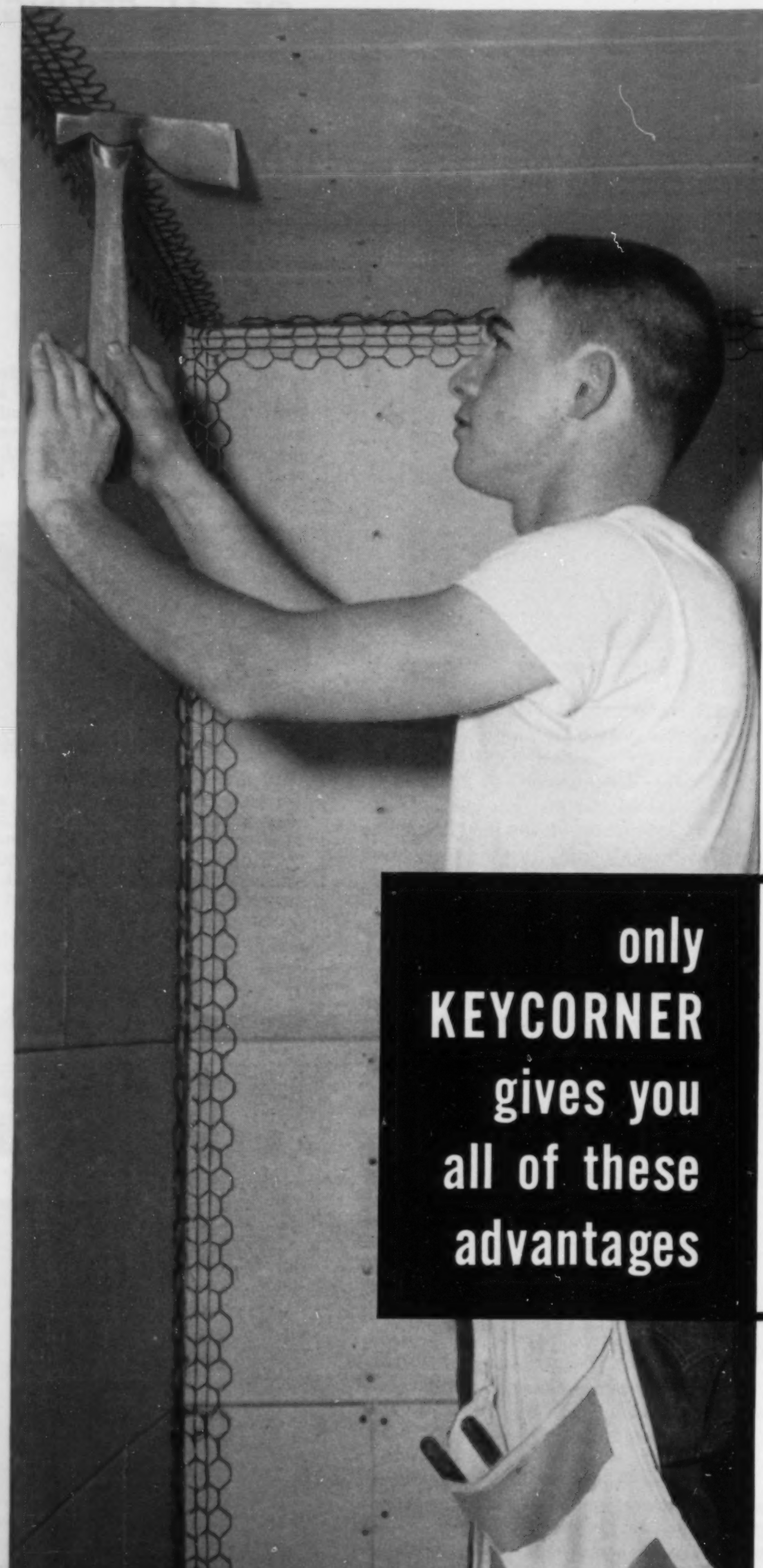

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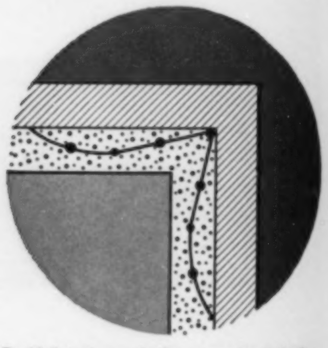

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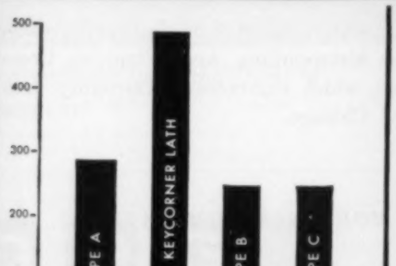

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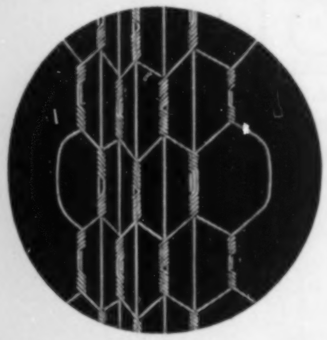

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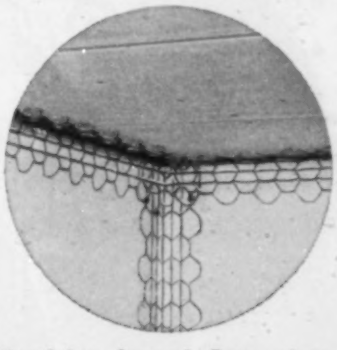

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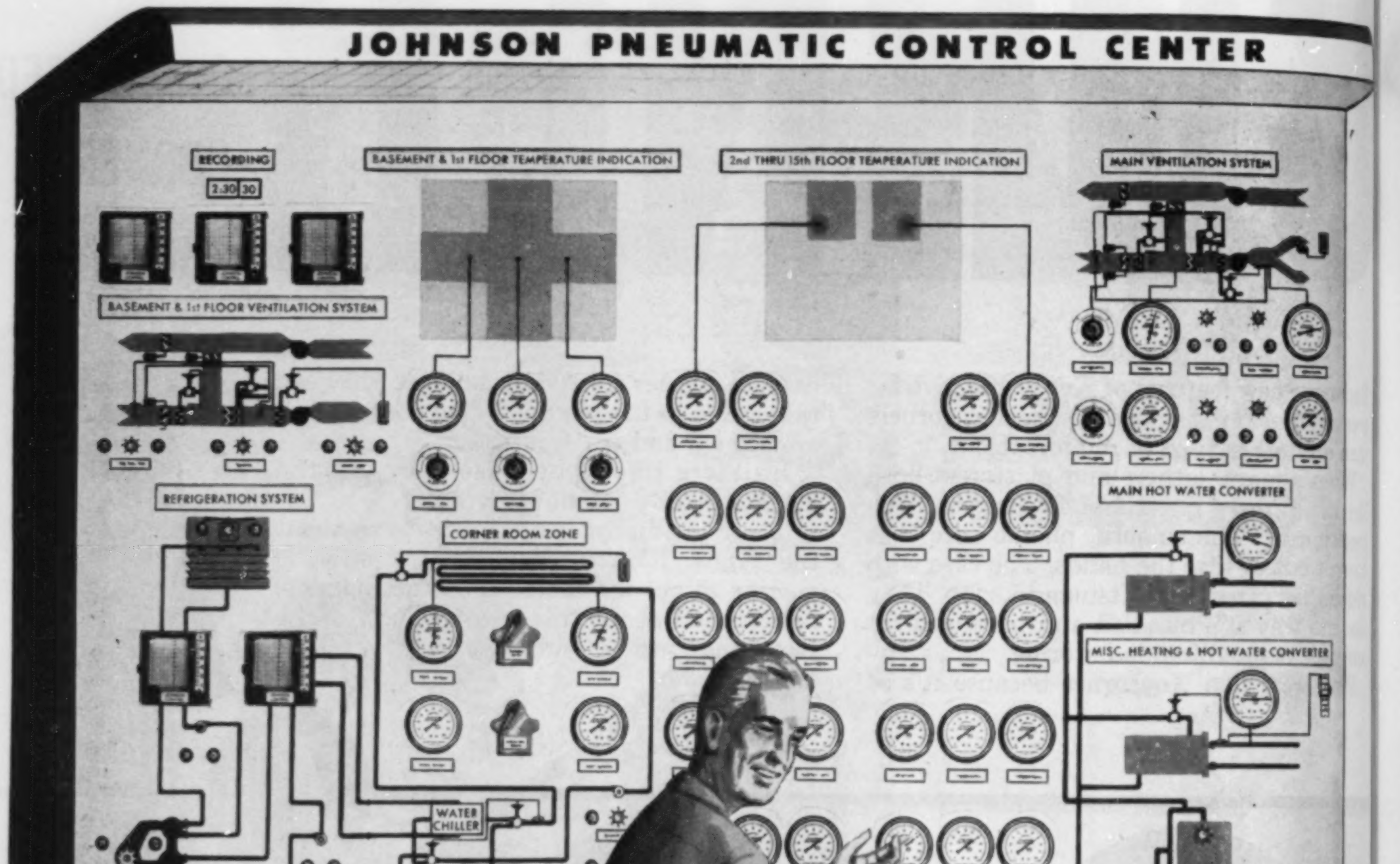
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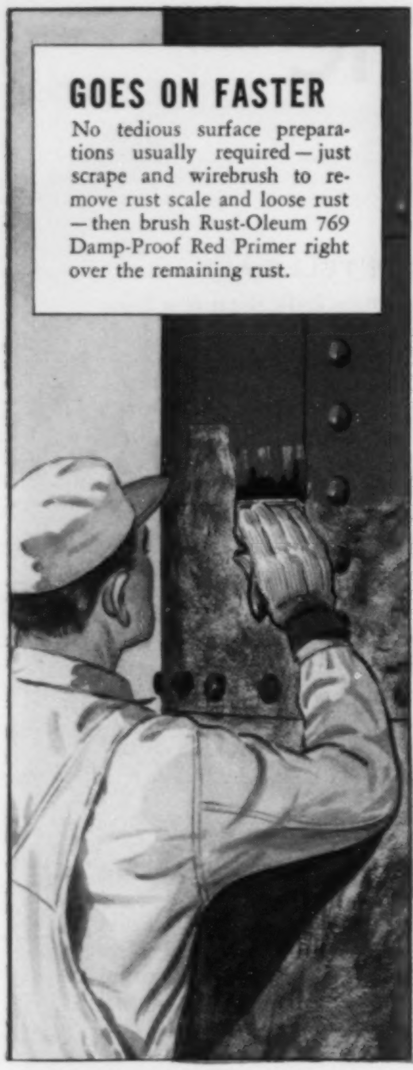

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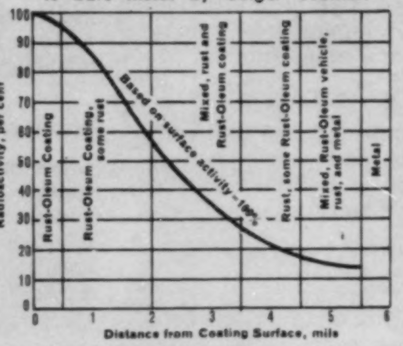
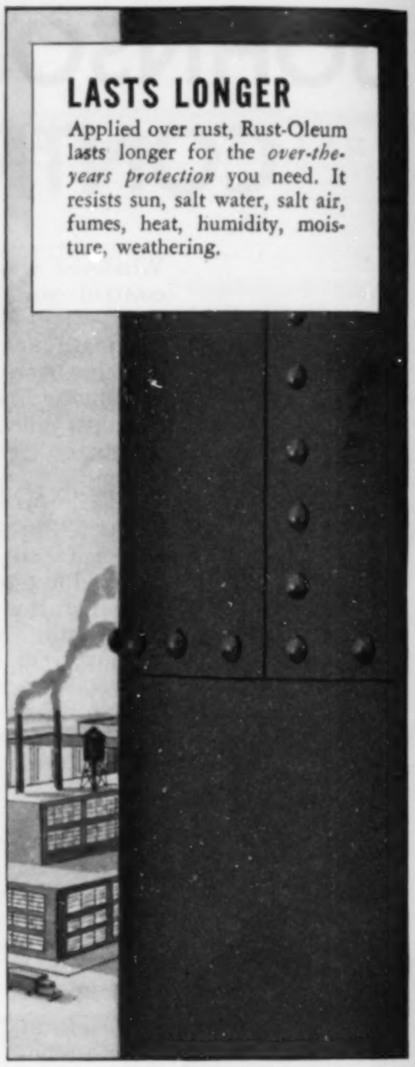
Chart shows results of tracing radioactivated Rust-Oleum through rust to bare metal by Geiger Counter.





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Editorial

Ornament rides again

"Ornament and crime" was the title of a famous Vienna newspaper article written in 1908 by the brilliant and eccentric Austrian architect, Adolf Loos. Loos contended unsmilingly that the jails were filled 80 per cent with tattooed men, and that murder and self-ornamentation were twin signs of the vestigial savage. "I proclaim a new day," said he. "The progress of modern man is measured by his removal of ornament from useful objects. We have art, which has replaced ornament."

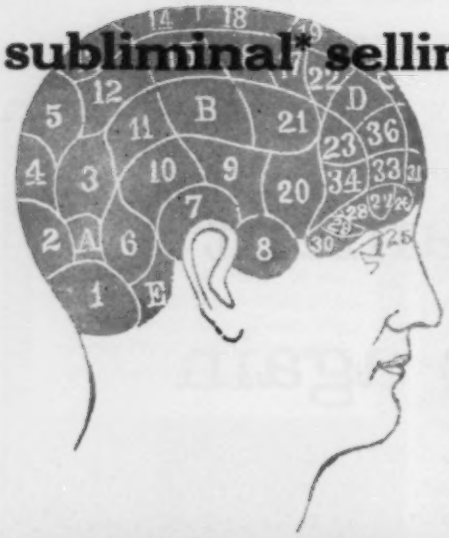
Vienna had a good laugh, but the article as a whole was to become prophetic of the next half century of modern architecture. Frank Lloyd Wright was the only major leader who kept his work openly decorative. "Applied ornament" became tabu; it was against the modern religion. To be sure, the shape of the building as a whole, it was still thought, could and should be ornamental. Refinement in the handling of necessary structural details could and should confer ornamental quality too. Color, being in any case unavoidable, could be made harmonious and even exciting. But woe to him who carved, painted, or otherwise supplied recognizably decorative themes for their own sake! Back to essentials!

Sly sinners soon began, of course, to create surreptitious decoration. They would surround their bare walls with sets of louvers and with egg-crate screens, which happened to cast pretty shadows—but these ornamental features were billed as purely functional sunshades. Mies van der Rohe ran steel rails or bronze ones up the austere and beautifully proportioned exteriors of his buildings; the effect was decorative but the rails were described as structural stiffening. Le Corbusier made sculpture of ventilation fans and penthouses on roofs, and lifted his buildings with ornamental effect onto legs called "pilotis"; but was not all this strictly essential?

Suddenly, within recent years, this covert ornamentalism of modern architecture, seeking escape from functional austerity, has broken out into the open. Today, there are clearly to be discerned several kinds of outright ornament.

"Patterned structure" might be a good name for the simplest and most transitional kind. The Kaiser domes (FORUM, March 1958), patterned and faceted on their exteriors like giant pineapples, are made of aluminum panels designed by pure engineering, and Nervi's Olympic stadium in Rome (also March) develops its beautiful lace ceiling out of concrete sticks placed in a purely structural arrangement. Yet mysteriously enough Nervi's fine engineering eye seems to be coupled with his fine esthetic eye in producing a single vision. He is impeccably functional and decorative both at once. And, mysteriously again, this decade, when offered a choice among equally good and equally functional

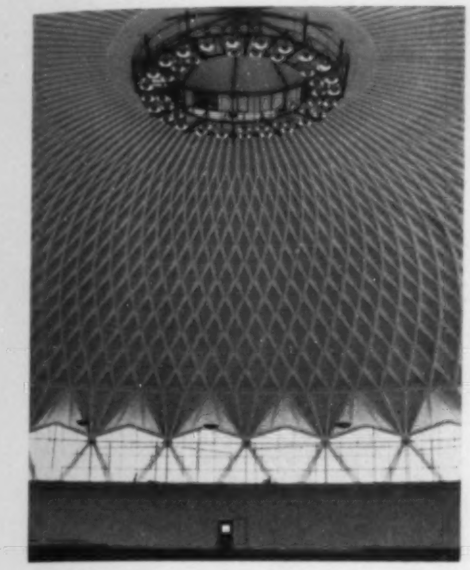
subliminal* selling at its best



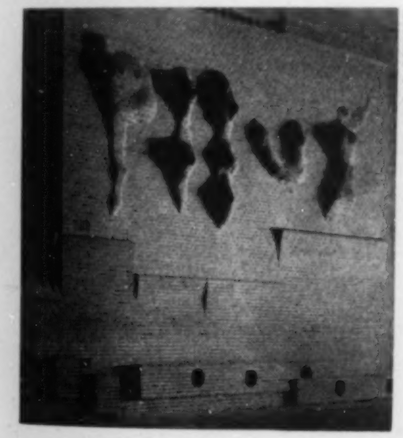
This attractive young lady is not the type that usually tries to spruce up her husband. But right now she's doing a great selling job because that's the most attractive suit she's ever seen. In fact, everything in the windows of Moore's new San Francisco store looks especially "buyable." The secret, of course, is in the lighting. Moore's uses display window ceilings of Honeylite to diffuse a soft, even, completely shadow-free light that makes window shopping a pleasure—buying a must. The outstandingly low surface brightness of Honeylite displays merchandise in its finest light—and it is subliminal* (below the threshold of consciousness). ■ Robert Israel, Moore's general manager in San Francisco, appreciates that modern lighting is a part of modern building and merchandising. That's why he chose Honeylite...light-diffusing aluminum honeycomb by Hexcel. ■ For prices and design information on Honeylite see your nearest lighting distributor or write Hexcel Products Inc., 2741 9th Street, Berkeley 10, California.

HONEYLITE®
Modern lighting by Hexcel Products Inc.

Three kinds of ornament:

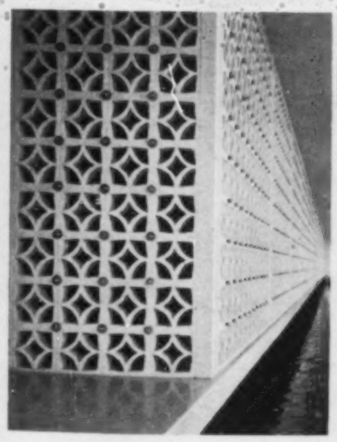


1. "Patterned structure" by Engineer Nervi



J. A. VRIJHOF

2. "Ornamental completion" by Sculptor Moore



MARVIN RAND

3. "Stock decoration" by Architect Stone

engineering answers, favors the patterned ones. Only yesterday, smooth flat forms were favored.

At another extreme from "patterned structure" is something that might be called "ornamental completion"—by artists. Next month, FORUM's Gallery will show a collection of walls in various materials, all executed by others than architects. In this work, heresy against pure functionalism is complete, for many different kinds of artists are being allowed to do more than add independent features like removable sculpture: they are being allowed to shape and adorn the sacred wall itself, a part of the essential structure of the building. And, in the case of Wallace Harrison's church at Stamford (page 104), this has gone so far that the visitor within the edifice is bound to respond first to the stained glass, not to the structure. This structure is secondary in value; indispensable, to be sure, it acts as a framework and an accessory to the glass. In this case the glass was designed by the architect doubling as artist.

And, finally, there is decoration pure and simple. In Edward D. Stone's very appealing plant on page 124 there are many decorative elements, such as pools, potted plants, suspended flower bowls. But the significant item is the screen wall of pierced concrete blocks, significant because the blocks are a stock item. They are just as standard an element in a decorative repertory as the Greek acanthus leaf and they are just as traditional in origin (the idea traces back to Persia). The blocks are suited, moreover, to being laid down by the yard or even by the mile.

There are dangers in all these changes. Patterned structure can go false, ornamental completion can violate the basic building idea, and stock decoration, becoming a fashion, can cloy even faster than functional nakedness can bore. But of course danger attends all adventure in the arts, and decisions are up to the conscience of the individual architect, and his style sense.

Winning architectural battles

The battle for an unspoiled U.S. Capitol hung last month in the balance. Bills were still pending that would prevent the boondoggle, and public opposition was mounting. Whatever may happen to the Capitol, there is no ground for discouragement in fighting for good public architecture. In recent years several battles have been won.

▶ In 1954 there was a strong threat that the great waiting room of the Grand Central Station in New York might be torn down. Two hundred architects entered a vigorous protest. This may not have been the main reason destruction was abandoned, but there is little question that the architects helped to win a delay which resulted in indefinite postponement.

▶ Last year the Robie House in Chicago, Frank Lloyd Wright's great 1908 achievement, was threatened with demolition. Again a strong outcry brought delay, and then individual stalwart architects, such as William Hartmann and Sam Lichtman, helped launch negotiations that resulted in preservation.

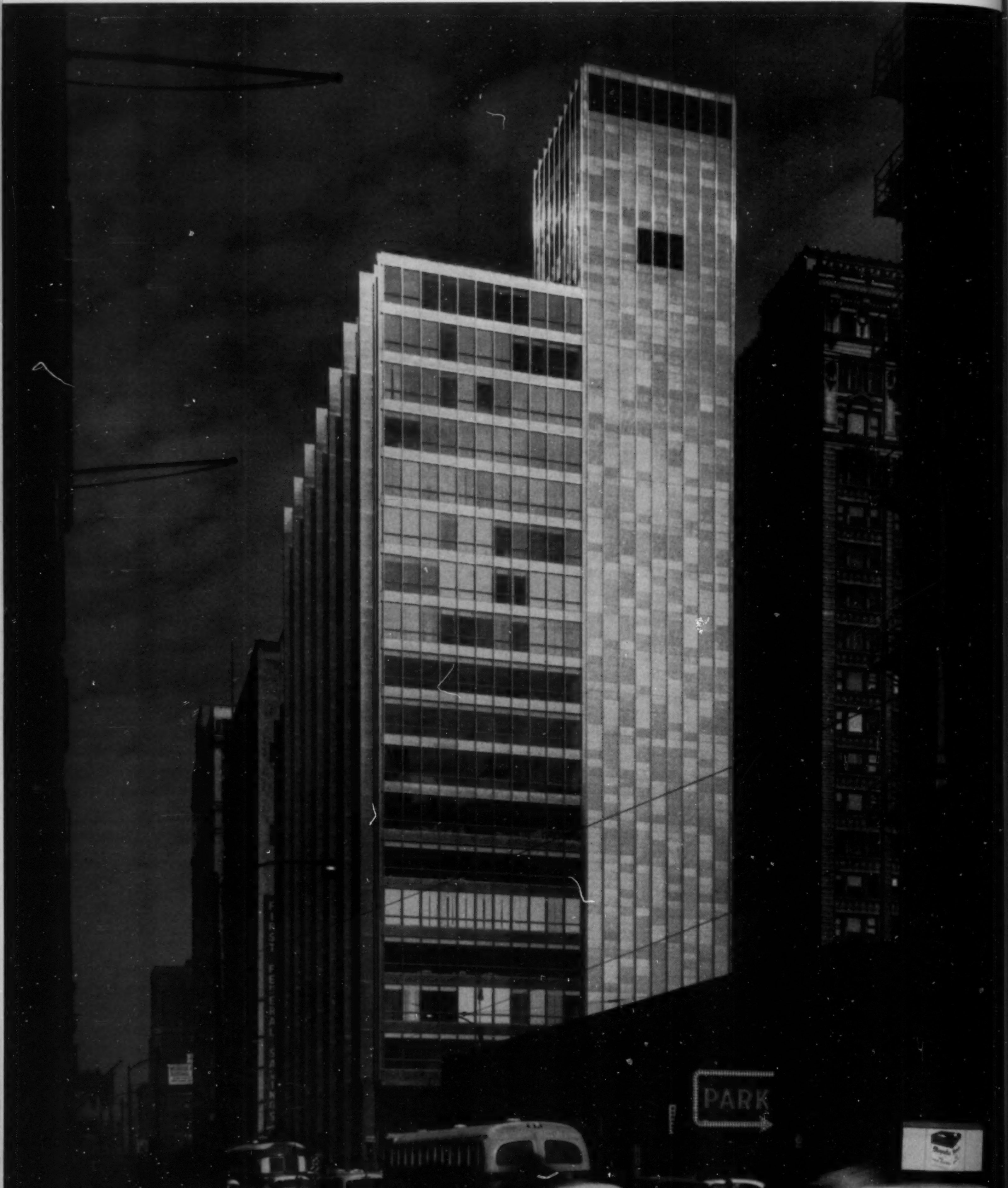
▶ Zeckendorf's big "Southwest" redevelopment project in Washington, important to the capital city, was saved from crippling handicaps in 1956, when the Smithsonian Institution was persuaded by public outcry not to plan a new museum blocking Zeckendorf's direct access to the main Washington Mall.

▶ The architects, professional societies, and newspapers that have stood up to House Speaker Sam Rayburn's stubborn insistence on extending the Capitol East Front are even now joining in a new battle to prevent placement of a Potomac River bridge in such a position that the Washington Monument area would be flooded with parking lots.

Where battles have been lost, they have been lost with honor intact. Meanwhile, many battles are being won and greater skill is being learned. END

Inland's steel showcase

PHOTOS: AARON SISKIND

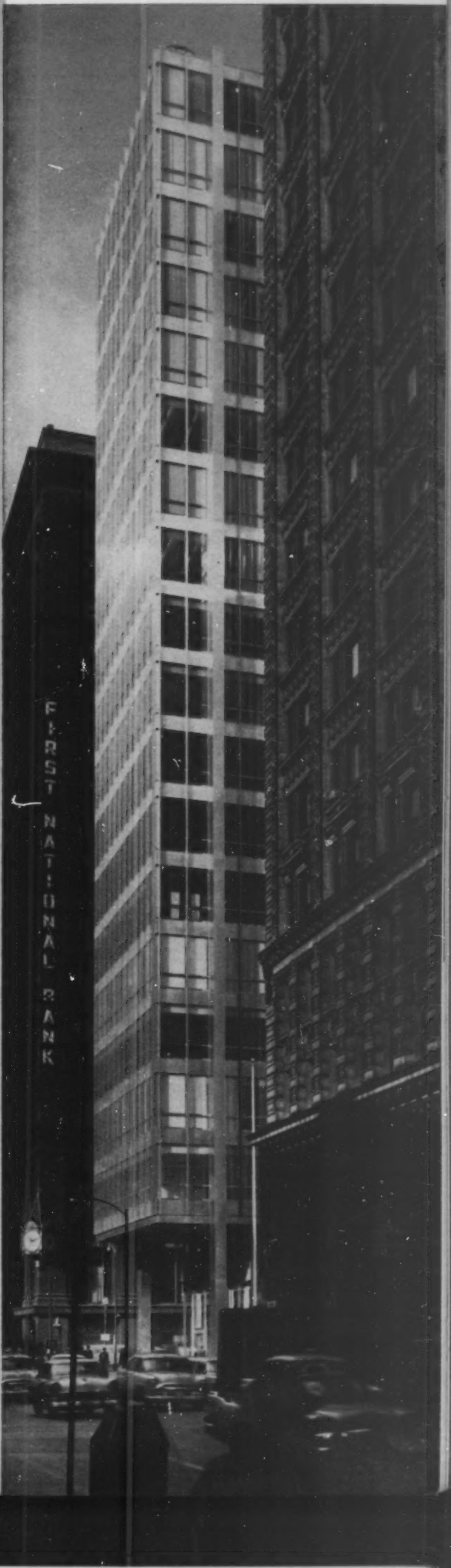


The first modern office building in the Chicago Loop packs its structure in outside columns and its services in an outside tower.

Four years ago, Architect Nathaniel Owings, of Skidmore, Owings & Merrill, sat down with Clarence Randall, then chairman of Inland Steel, to discuss a new headquarters for the company. As Randall (now retired) recalls it, "Nat asked me what kind of a building I would like. I told him I wanted something very conservative and temperate. I said, 'I want to preserve the best of the past. I want this building to be like a man with immaculate English tailoring—his clothes are so good you are not aware of how well he is tailored.' "

The gleaming steel tower (left) that SOM recently completed for Inland may not seem particularly "conservative," but it meets Randall's specifications, nevertheless. For one thing, the glass and stainless steel tower with its bold projecting columns and separate service tower is certainly well tailored. And if the tailoring is obvious, it is because impeccable tailoring is a rarity in these days of the quick and the ready-made.

Moreover, the building has a definite link with the best of the past. The first major structure to be built in Chicago's Loop in 24 years, the building is, appropriately, a spiritual descendant of the so-called "Chicago School" of architecture, the last great example of which is Louis Sullivan's Carson, Pirie, Scott store completed in 1904, located just two blocks away. The Inland Building's heritage goes further back—to a long line of steel-frame structures, beginning with William Le Baron Jenney's giant Fair Store which was completed in 1891 and which still stands one-half block south of the Inland Building. Another antecedent is the Standard Building (foreground, photo right), even if its steel



Steel-sheathed tower alongside the glass-walled office wing (photo, left) contains elevators and other service facilities. The seven exterior columns seen along the side of the office wing are the keys to Inland's columnless interior space. Set like a faceted mirror into the center of Chicago's Loop, the new structure is the epitome of steel frame construction which gave Chicago its architectural leadership before 1900.

cage and glass wall is obscured by an ornamental encrustation of the columns and spandrels.

The new glass- and steel-sheathed Inland Building is, then, conceived in Chicago's finest tradition. The wide-span structure with its steel-framed floors stacked like rectangular trays on a rack and its separate service tower pulled out of the office section make the building a kind of ultimate steel frame.

Boom steel

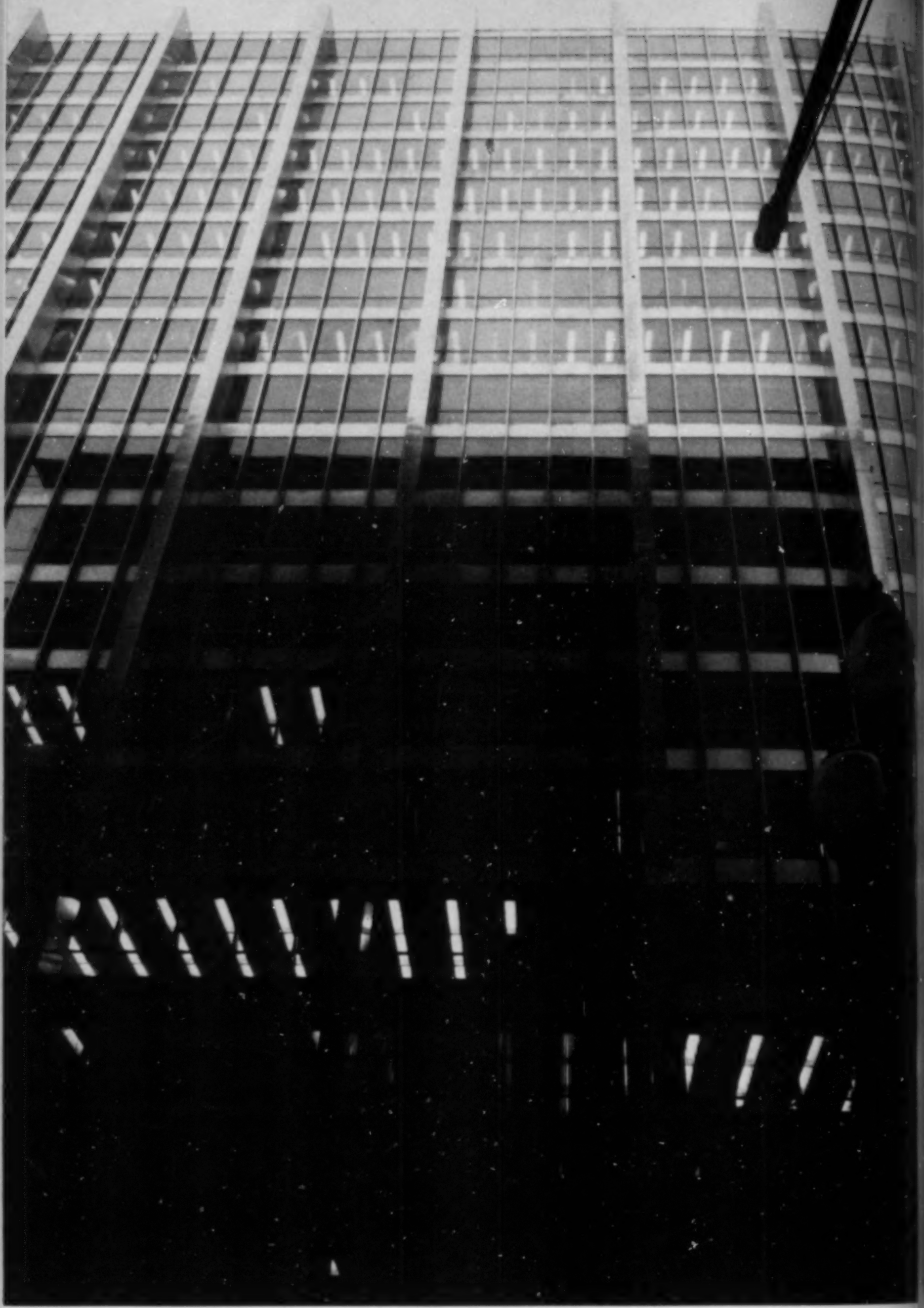
During the heyday of the Chicago School, more than half a century ago, the scrappy, little Inland Steel Company proved to be aggressive competition for the giant eastern mills. It supplied a good share of the steel needed for the buildings which turned the Loop district into a great central city. Today, under the presidency of Joseph L. Block, son of a founder, the company still maintains its competitive posture. Indeed, with sales of $764 million in 1957, it now ranks eighth among U.S. steel companies.

In 1953 Clarence Randall asked Inland's top-level planning committee (chairman: Joseph L. Block) to investigate the adequacy of the company's general offices which the company had occupied since 1904. The committee called in Ferd Kramer, a Chicago realtor, for advice. Kramer, after investigating the possibility of remodeling Inland's existing space or leasing new space in the Loop, proposed that Inland build its own new building across the street from its old quarters.

Once the decision to build was made, says President Block, "we decided to build a building that would do steel proud and do our city proud."

And the building that SOM designed is, indeed, both a civic monument and a showcase for Inland's diversity of steel products. Its 19 big floors of 10,200 square feet each are uninterrupted by columns, wall breaks, or service elements.

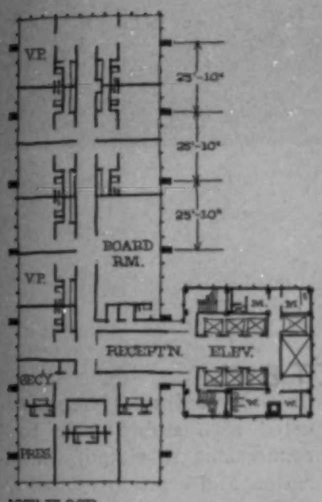
Inland, which occupies eight of the floors, has found that the open



Projecting columns boldly overlay the usual pattern of big glass panels, thin mullions, and minimum spandrels.

Main entrance is sheltered by the cantilevered projection of upper floors beyond the columns (plan, right, below).

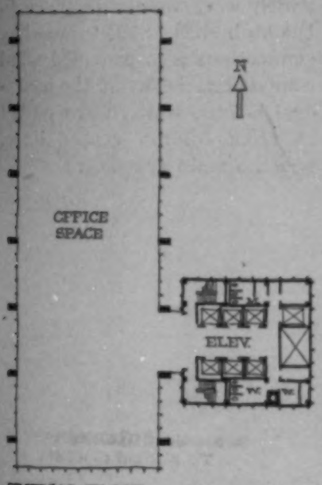
President Joseph L. Block works in a thick-carpeted office surrounded by modern art: painting at left by Georgia O'Keeffe, furniture by SOM.


V.P.
25'-10"
25'-10"
25'-10"
BOARD RM.
V.P.
RECEPT'N.
ELEV.
SEC'Y.
PRES.

19TH FLOOR

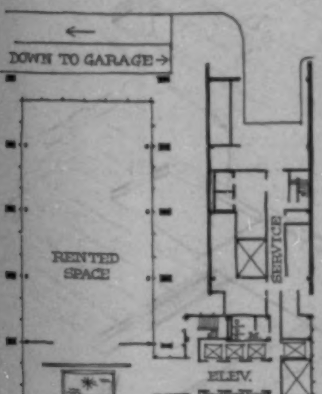
PHOTOS: AARON SISKIND

Sculpture by Seymour Lipton marks the end of the executive corridor (plan left). Vice President Leigh Block, who was in charge of the building program, is at his desk beyond.

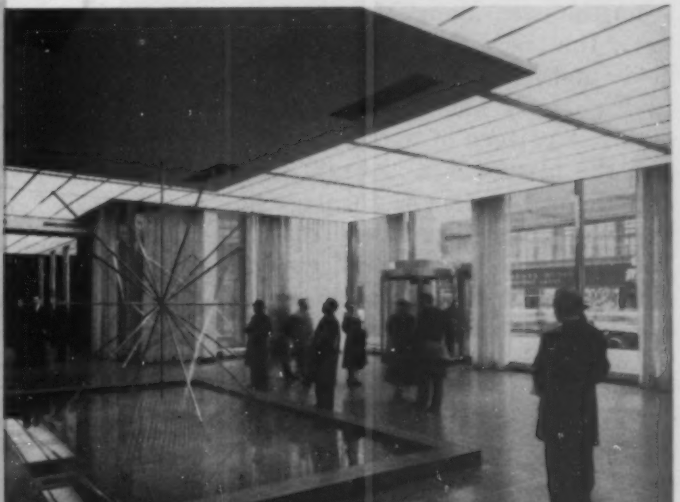

N
OFFICE SPACE
ELEV.

TYPICAL FLOOR

Board room can be closed off from the corridor by sliding glass doors. Across the hall two executive offices can be seen, each with a separate anteroom for a secretary.


DOWN TO GARAGE→
RENTED SPACE
SERVICE
ELEV.

FIRST FLOOR



Steel tubes are suspended in space on wires of gold, red enamel, and stainless steel tensioned between the ceiling and the reflecting pool in the lobby. The focal-point sculpture, by Richard Lippold, is symbolic of Inland's products. At the left rear can be seen the elevator lobby in the base of the service tower.

floors yield impressive savings in space. To accommodate its 530 employees, for example, Inland in the old building used 81,000 square feet (central corridors took up 18 per cent of the total space). In the new building, the employees are settled in 78,500 square feet, and 7,600 square feet of this area are devoted to dining facilities which were not available in the old quarters.

One of the big advantages Inland derives from owning its own building is that it is assured of space for expansion. By leasing the floor immediately below the company-occupied floors for five years, Inland can obtain additional space in the predictable future. The floors below that are leased for 15 years. These floors, which are occupied by a list of blue-ribbon firms (including SOM and Draper & Kramer), rent for $6.45 to $7.33 per square foot, $.83 higher than the top price in the newly air-conditioned Field Building, built in 1934, and $1.58 higher than the top price in the new Borg-Warner Building.

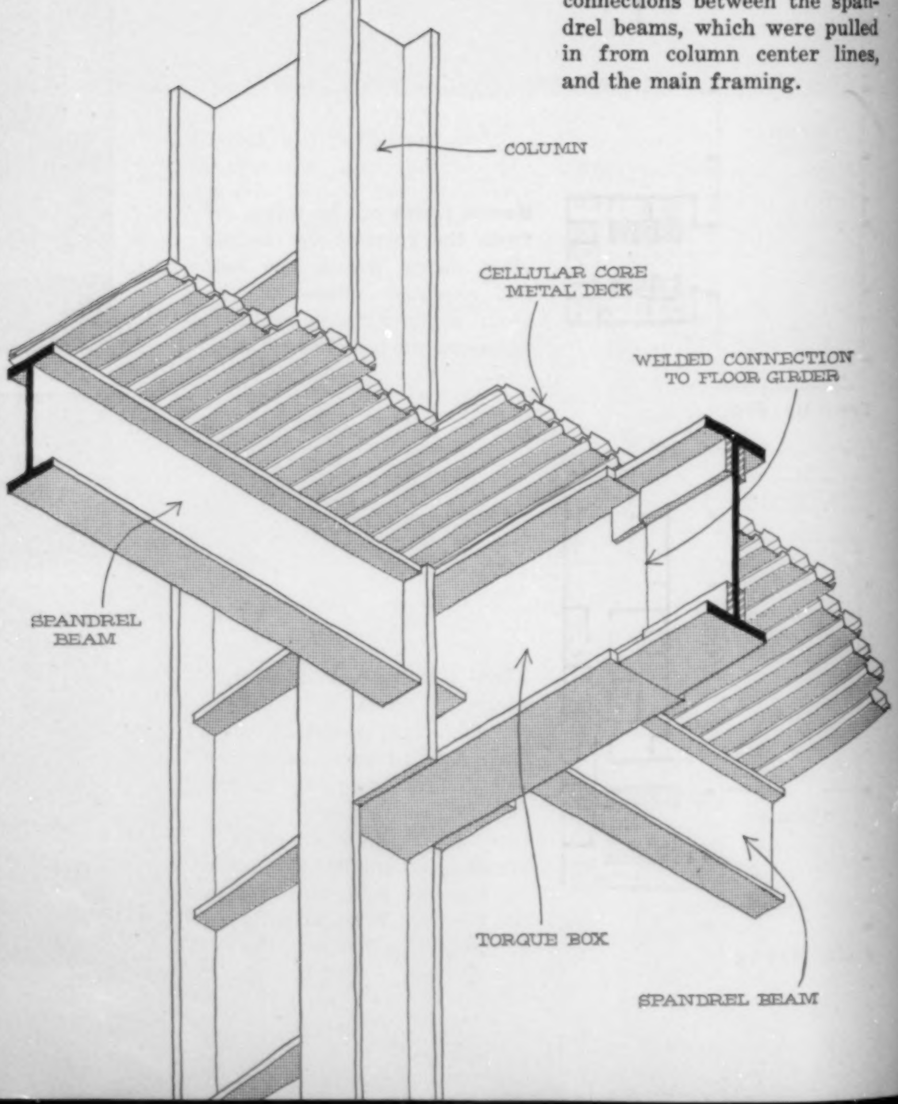
Since Inland did not want ground-floor space cluttered with stores, the ground floor (behind the main lobby) is leased to the Chicago Association of Commerce and Industry at office rental rates.

The view from the street

Viewed from the north, along Dearborn Street (photo right), or from the east, along Monroe (page 89), the new building offers a bold and even exciting contrast in the darkly shadowed Loop. The vigorous pattern of outside columns and the play of sun and city lights across the façade (photo, page 90) is a significant departure from the flat look of today's typical curtain-walled buildings. If, as some observers have noted, the steel service tower and the glass office wing seem neither to belong to each other nor to be separate enough, this deficiency is well balanced by the quality of vigor in the fragmentary view. And, after all, this is the perspective from which buildings are usually viewed.

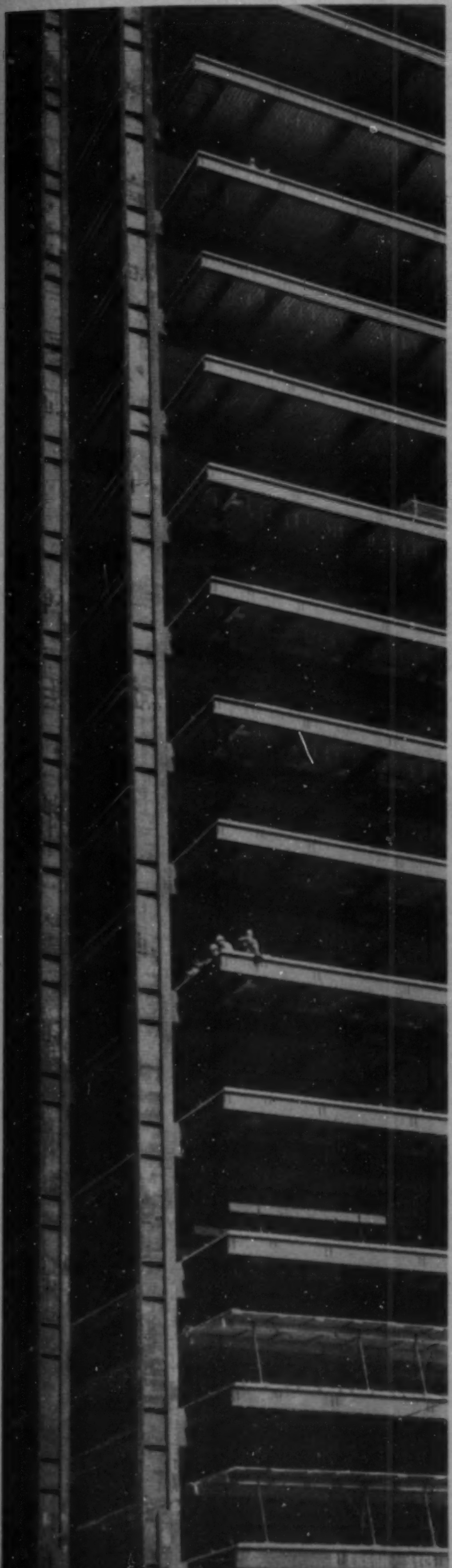
Wide-open floors, uninterrupted by columns, are laid out on a 5-foot, 2-inch building module which aligns window mullions and columns with the grid of the perforated steel-pan ceiling. All interior partitions are set on the grid lines.

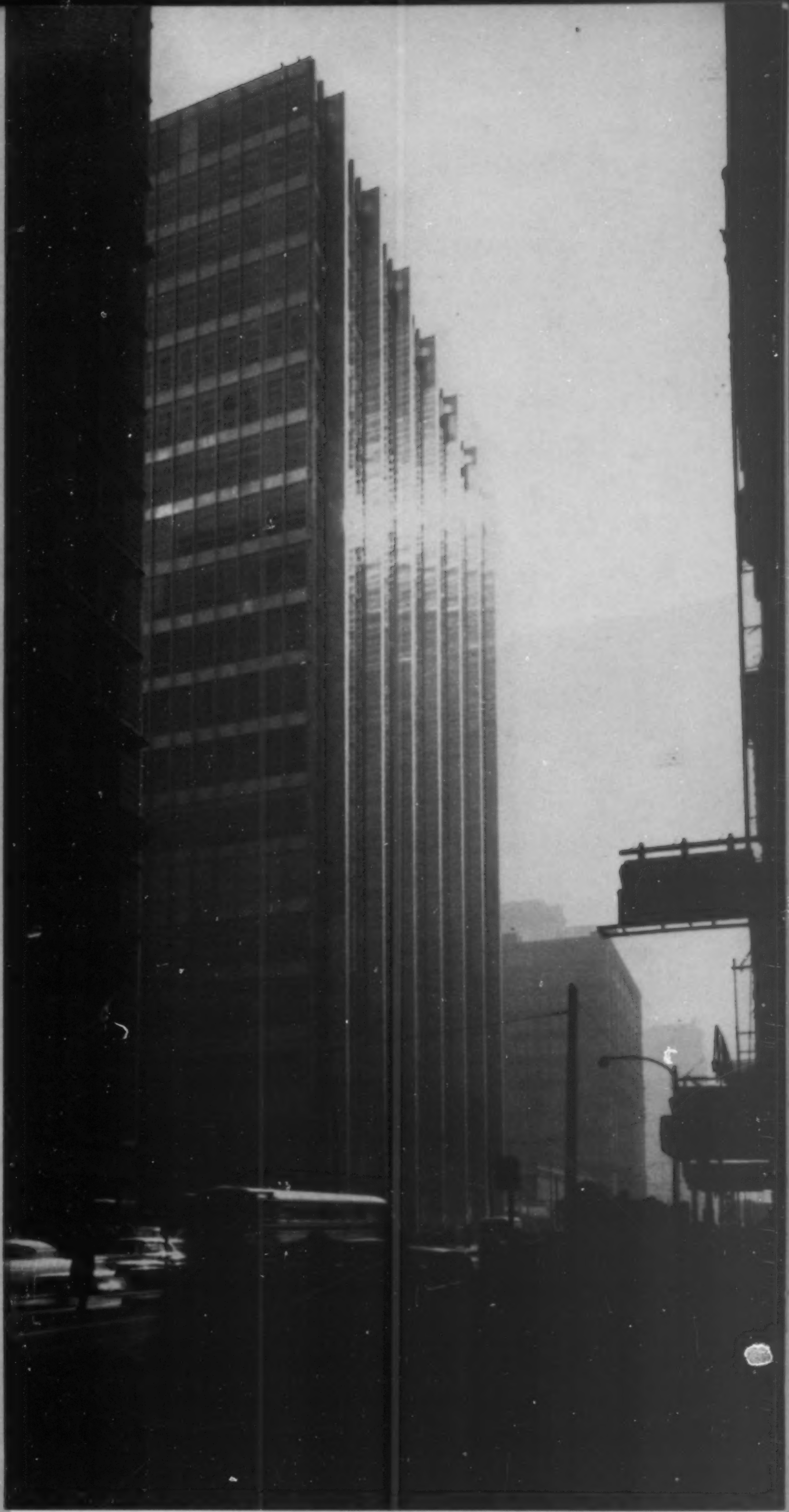
Exterior columns were fabricated with stub "torque box" connections to simplify fabrication and erection of the 60-foot clear-span floor beams, which were welded in place to the stub ends. Stiff torque box connections also provided wind connections between the spandrel beams, which were pulled in from column center lines, and the main framing.



Curtain wall of glass and stainless steel sheathing provides a glistening, jewel-like foil to the dark-walled, close-built streets of the Chicago Loop. Streaks of sunlight and reflections of street lights and neon signs multiply and repeat across the vigorous and unabashed façade.

Steel frame, shown here before the curtain wall was erected, is essentially a stack of rectangular floors resting on the rungs of seven ladderlike structural frames.

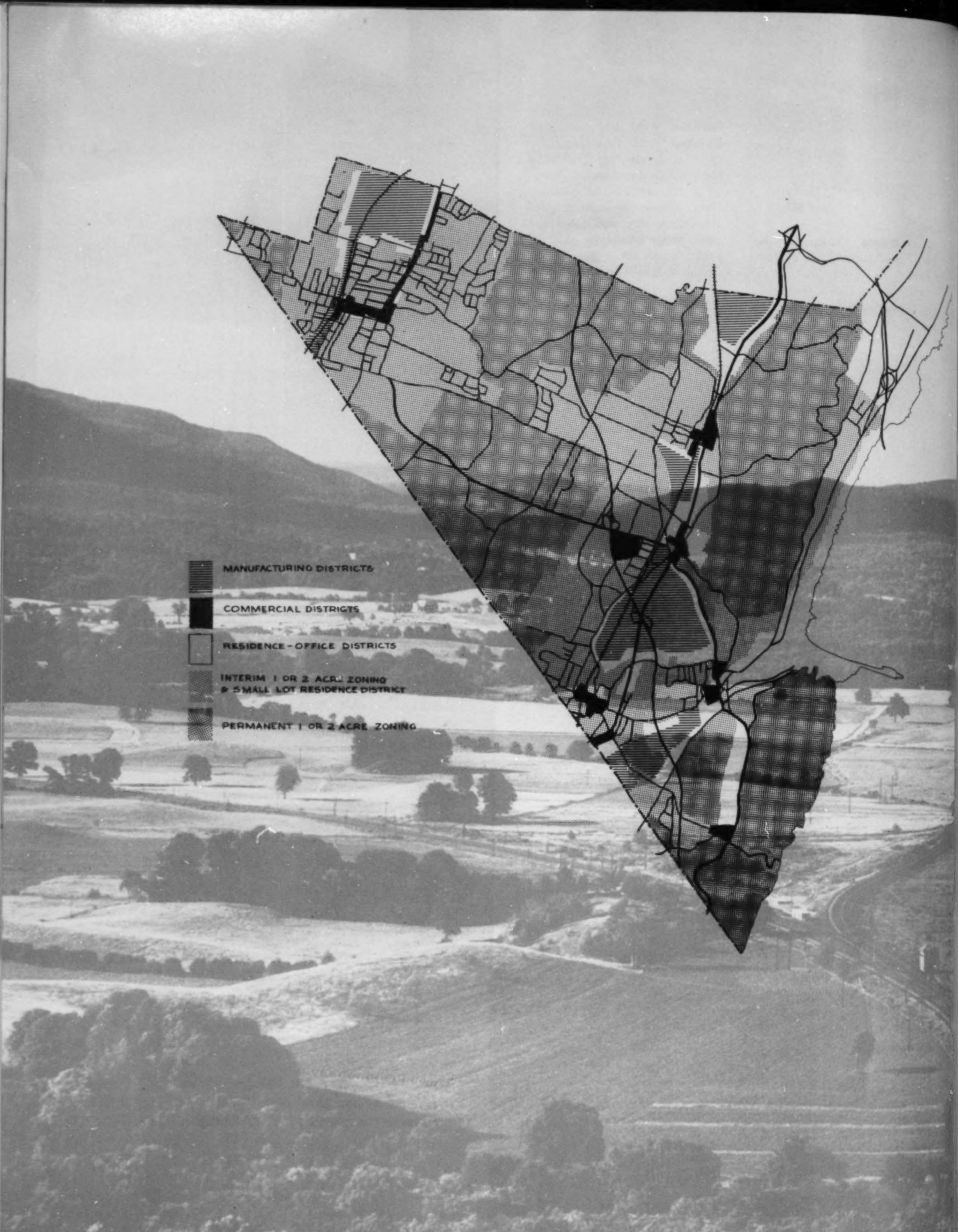




PHOTOS: (ABOVE & OPP. PAGE) AARON SISKIND; (LEFT) KAUFMAN & FABRY CO.

INLAND STEEL BUILDING, Chicago, Illinois
ARCHITECTS AND ENGINEERS: Skidmore, Owings & Merrill
GENERAL CONTRACTOR: Turner Construction Co.

END


MANUFACTURING DISTRICTS
COMMERCIAL DISTRICTS
RESIDENCE-OFFICE DISTRICTS
INTERIM 1 OR 2 ACRE ZONING & SMALL LOT RESIDENCE DISTRICT
PERMANENT 1 OR 2 ACRE ZONING

With acreage zoning, towns on the urban fringe are trying to stem the tide of urban sprawl. But zoning is only part of the answer.

Exurbia's last best hope

BY RICHARD A. MILLER

←

The zoning plan is the exurbanites' chief weapon for slowing down the pace of urban growth and preserving some semblance of country life for local residents.

Except for the thorny questions of segregation and schools, the pace and character of community growth is probably the hottest political question in suburbia today. And zoning ordinances, initially conceived as devices for policing the private use of land, are, today, expected to control community growth as well. Variously, they are expected to preserve open space, turn aside the push of urban expansion, attract industry (and only certain kinds at that), improve social status, and keep taxes low. Indeed, zoning is even expected to keep down the cost of public education and, occasionally, to maintain patterns of economic (if not racial) segregation.

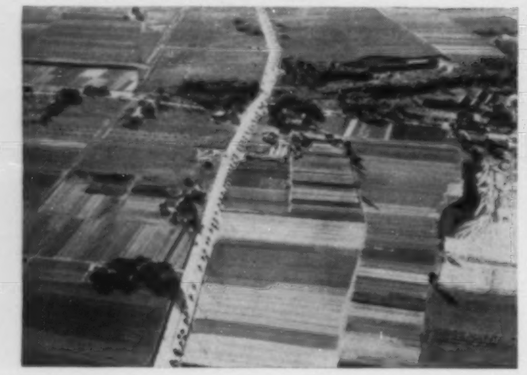
The plain fact is this: in the suburbs and the receding exurbia beyond, zoning laws often seem to be the only available means to achieve these varied and conflicting goals. But, the rub comes precisely from the fact that the same laws are supposed to operate to the satisfaction of everyone, from the heavy-footed developer who plats an endless colony of split-levels to the settled resident who wants to save his picture-window view of open fields, belonging, more often than not, to the man next door. As for the farmer or estate owner next door, he would keep things just as they are—at least until he gets an offer for his land that is just too good to turn down.

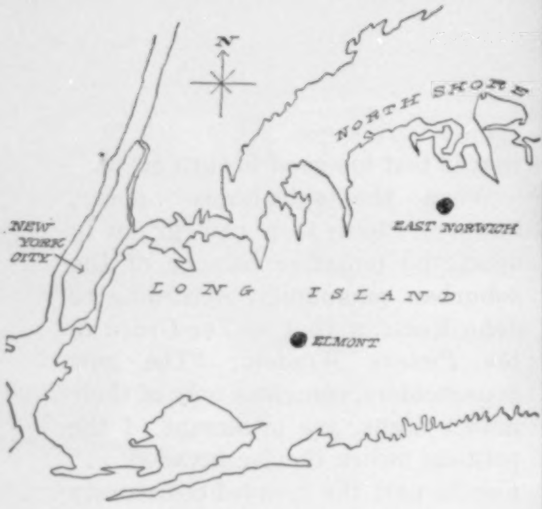
When the split-levels appear, however, there is a new group to upset the tentative balance of the suburban community. According to John Keats, author of *The Crack in the Picture Window:* "The new householders, conscious only of their unmet needs, are intolerant of the political milieu they've invaded. . . . For its part the invaded community eyes the newcomers with something less than enthusiasm. . . . The administrative problems handed the local government by the sudden appearance of several thousand new householders is enough to make a strong man belch."

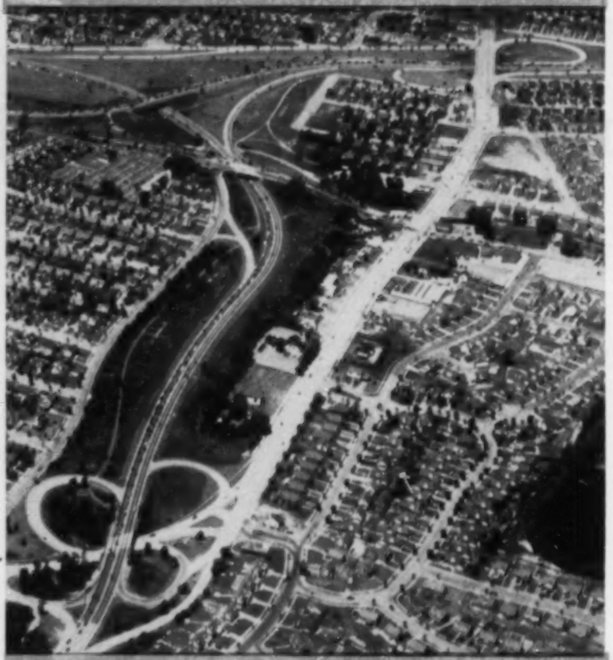
Euclid vs. Ambler

Although zoning laws were introduced in the cities, it was a suburban ordinance which first brought comprehensive zoning under the scrutiny of the U.S. Supreme Court. When the case of the Ambler Realty Company vs. the Village of Euclid, Ohio, came to the court in 1926, only a few states had held zoning valid and constitutional. Although the Ambler Company agreed that the village had the power to regulate building and land use, it claimed that the Euclid ordinance established a residential district where an industrial district would be more appropriate. Thus the industrial

PHOTOS: FAIRCHILD AERIAL SURVEYS, INC.; (OPP. PAGE) CONTINENTAL AIRVIEWS







Long Island contrast: Small-lot zoning pushed far beyond Brooklyn and Queens between 1920 and 1958, turning potato fields into tight residential districts. Elmont, for example, was farmland in 1931 while today it is completely built up (photos left).

Farther out, land has been zoned for acre-size lots since the 1920's. The East Norwich area (photo right) is typical: in the 3-square-mile area shown, two incorporated villages (Muttontown and Upper Brookville) are both largely zoned for 2-acre lots. The remaining area, including the old town of East Norwich (1), is in the township of Oyster Bay, which has a varied pattern of zoning, including many older small-lot districts (2) and some new developments (3) on land formerly used for farming.

One estate, at one time the property of Mrs. Consuela Vanderbilt Balsan (the former Duchess of Marlborough) was turned into a country club. Nearby is a new development (4) of houses on 1- and 2-acre lots.

In Muttontown, some estates are left intact (5), while others have been split up into smaller plots (6). The 159-acre estate south of route 25A (7) was broken up in the 1950's. In Upper Brookville (8), there are some acreage developments underway, with homes on 2-acre lots selling for more than $70,000.

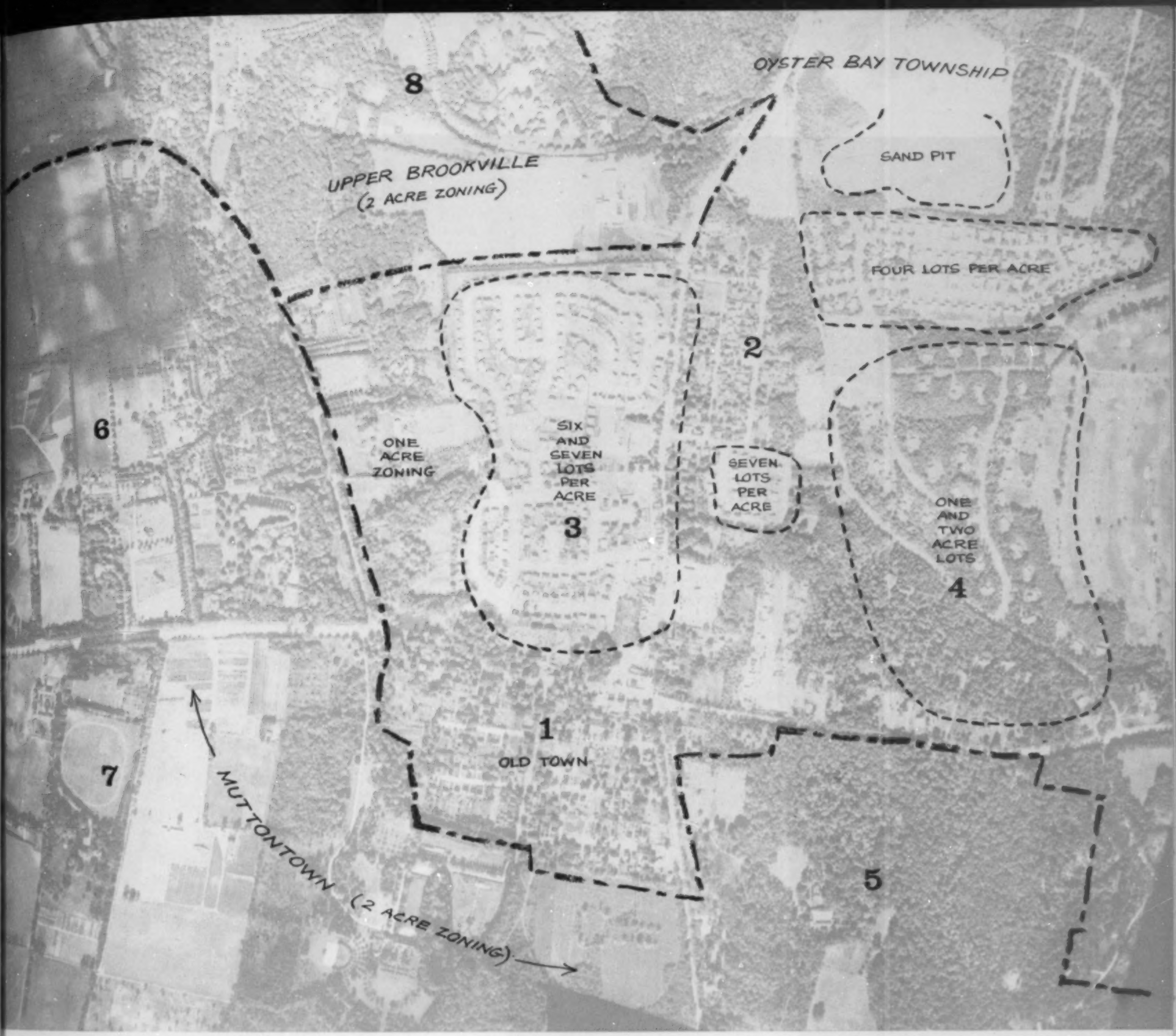
In Elmont, Long Island, small-lot developments turned potato fields into a solid mass of houses.

growth of metropolitan Cleveland was restricted and the value of the land was diminished because it was zoned for residential purposes. But, the court upheld the Euclid ordinance as a legitimate use of the health, morals, safety, and welfare powers of the municipality, and with this validation, zoning soon became common throughout the U.S.

But today, suburban zoning does a great deal more than merely control building and land use. Indeed, with acre-size minimum lots, zoning is now being used to control the *pace* of community growth as well. The theory is simple. If large sections of the undeveloped territory in the community are zoned, not just for residential use, but for 1-, 2-, or even 5-acre lots, the reasoning goes, no large-scale, low-cost housing development will take place. Moreover, only upper and upper-middle income families will, as a rule, be able to purchase, maintain, and build on these acreage lots. And since the number of children in a family does not usually depend on family income (indeed the ratio of children to income is often inverse) there will be a smaller increase in school population per dollar of increased tax value than if lot sizes were smaller. In addition, acreage zoning has the advantage of keeping the cost of community services down. Septic tanks, for example, work well in most areas if the density of population is low, which obviates the need for expensive community disposal facilities. Over all, both capital and operating costs are lower: for roads, for police and fire protection, for administration, and other expenses that take up community tax dollars.

From Akron to Tucson

Such is the theory of acreage zoning. And the theory has been applied with some success along the eastern seaboard for years. Large stretches of Long Island and West-



In East Norwich, Long Island, acre-lot zoning is used to block the approaching urban sprawl.

chester County in New York, for example, as well as the farther reaches of Connecticut and New Jersey, have used acreage zoning since the late 1920's. But except for a few communities near Los Angeles, San Francisco, and Chicago, the trend was not noticeable elsewhere until recently. Now, however, it has spread to smaller metropolitan areas as far afield as Akron, Ohio, Tucson, Arizona, and Atlanta, Georgia.

The evidence at hand indicates that acreage zoning can, indeed, achieve a measure of growth control. In northern Westchester, outside New York City, Yorktown, which has only about half of its territory zoned for 1 acre minimum lots, grew 150 per cent in population from 1950 to 1957. On the other hand, adjacent Somers Township, with more than half of its territory in a 2-acre zone and most of the rest zoned for 1-acre, grew only 38 per cent in the same period.

But Hugh Pomeroy, director of Westchester County's department of planning, believes that acreage zoning has only a temporary effect on a suburb's rate of growth. Noting the trend in the Kings Point, Sands Point, and Old Westbury areas of Long Island where acreage zoning has been in effect for some years, Pomeroy says: "At first there was little subdivision activity in districts zoned for 1- and 2-acre lots. But with continuing pressure of development and a growing demand for houses in spacious, low-density neighborhoods, subdivision development is now taking place." The quantity of the growth, however, has obviously been less than if these communities had been zoned for lots smaller than 1 acre.

"Really," says Pomeroy, "the main advantage of acreage zoning is not that it restricts growth, but that it is an appropriate technique for the carrying out of master planning, and the result *can* be the kind of

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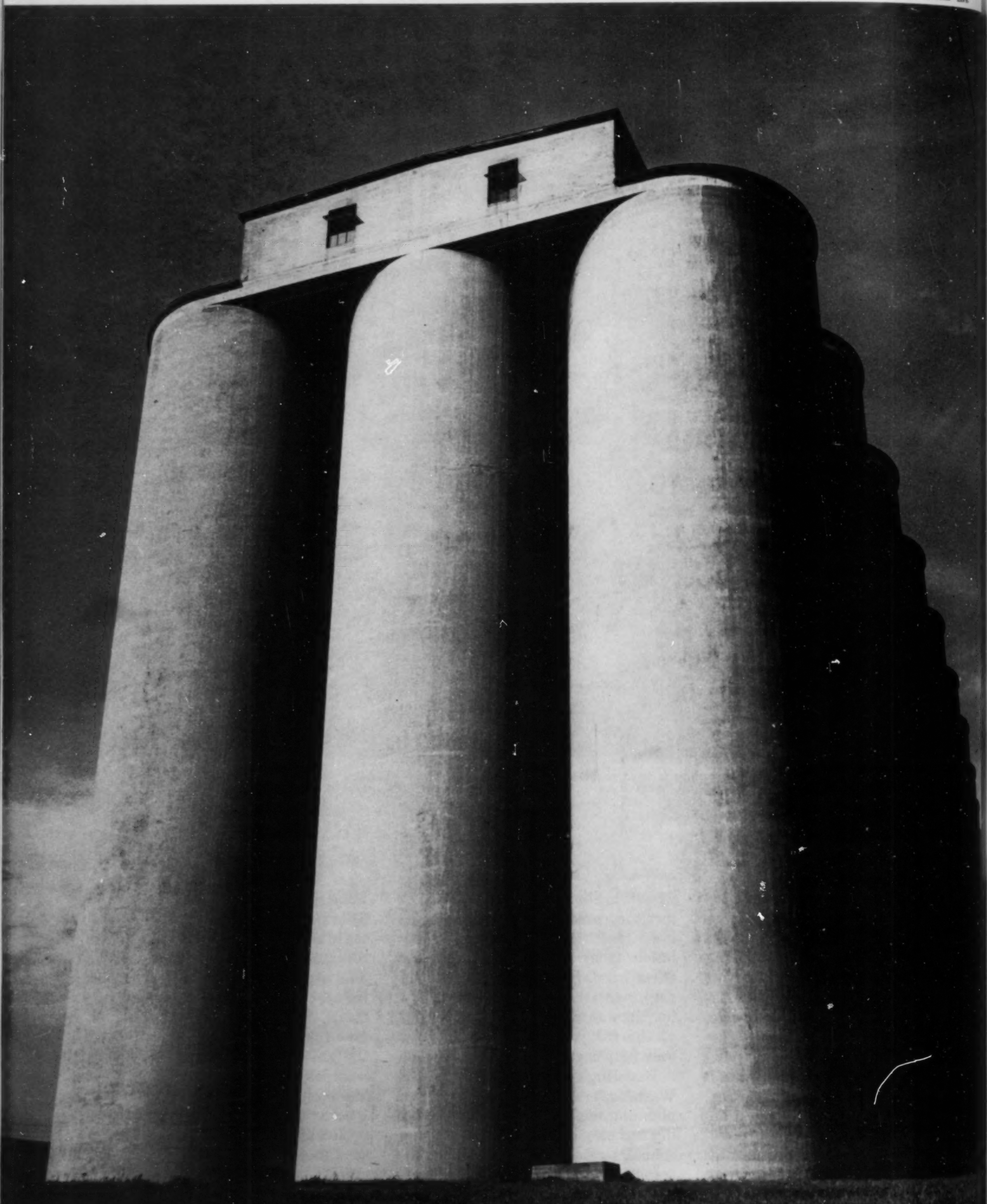
GORDON COSTER—LIFE



Form follows function–or does it?

BY PETER BLAKE

A building may be highly functional—but, contrary to what many people think, this will not necessarily make it beautiful. Here is a new definition of the meaning of "functionalism."

" 'The problem of architecture as I see it,' Professor Silenus told a journalist who had come to report on the progress of his surprising creation of ferro concrete and aluminium, 'is the problem of all art—the elimination of the human element. . . . All ill comes from man,' he said gloomily; 'please tell your readers that. . . .' "

When Evelyn Waugh wrote his satire, *Decline and Fall,* in 1928, most of his readers accepted this misanthropic concept of a "functionalist" as an architect who thought that good came only from the machine. It was a natural enough assumption: had not Le Corbusier said that "a house is a machine to live in"? And had not Louis Sullivan laid down the law some thirty years earlier by stating, unequivocally, that "form follows function"—which (as everybody knew) could only mean that architecture should grow straight out of wiring, plumbing, and steam heating?

"Form follows function" was the catch phrase that spelled (and continues to spell) *modern* architecture to most laymen. In 1928, it seemed like a strange idea, cold and forbidding; today, although widely accepted (and even more widely misunderstood), "form follows function" continues to evoke the image of modern as opposed to traditional architecture more readily than any other slogan. Yet there is no architectural principle that can claim a more ancient and distinguished tradition.

Form has followed function from the paleolithic cave dwellers to the neolithic lake dwellers; it followed function in Roman forts and aqueducts, in medieval castles and the Great Wall of China, in eighteenth-century English warehouses, and in twentieth-century Manhattan office piles. Functionalism, in short, is as old as building itself.

What has seemed to make functionalism new during the recent past is simply this: at the start of every radically new movement in architecture, better *function* (rather than better appearance) is the criterion by which the movement is judged. The first cathedrals of the Norman period, for example, were extremely simple and austere—stone shells built to fit around a ritual. Only when they had stood the test of functionalism did architecture move on to Chartres. The first loft buildings of the Industrial Revolution were severely practical. But once the functional base had been laid, Sullivan and Root could approach the esthetic problems of the skyscraper. And the large office blocks demanded by our present Managerial Revolution are just beginning to emerge from their early functionalist phase.

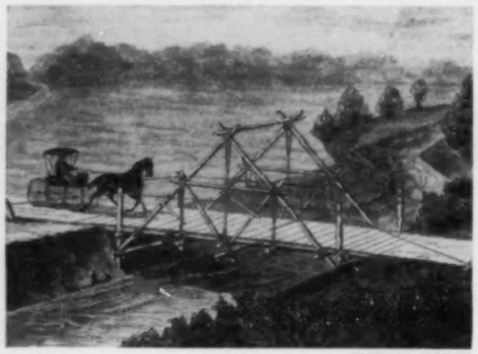
Critics of functionalism sometimes suggest that functionalism stops where architecture begins. This is unfair both to functionalism and to architecture. The functionalist period in the development of a new architecture is much like the formative childhood period in the life of a man. As he matures, he may reject many of the fads

Grain elevators with their plain, geometric monumentality served as an inspiration for many modern architects. Yet these structures were "undesigned," did not become art until reinterpreted by skilled architects.

"Naïve" functionalism

DIMITRI KESSEL—LIFE

1



BETTMAN ARCHIVE

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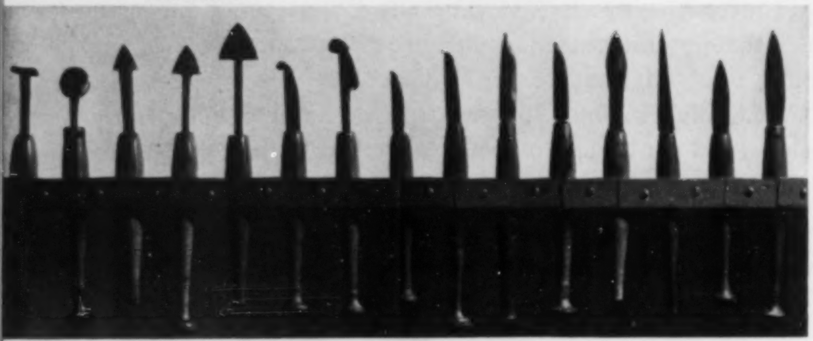
ELIOT ELISOFON



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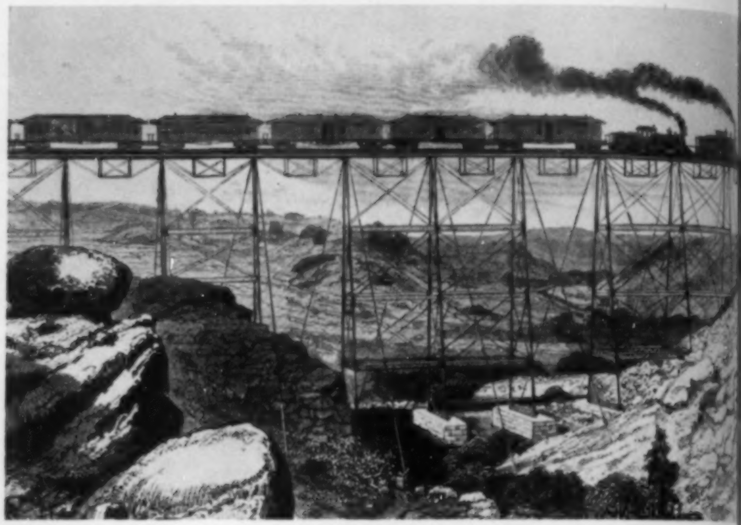

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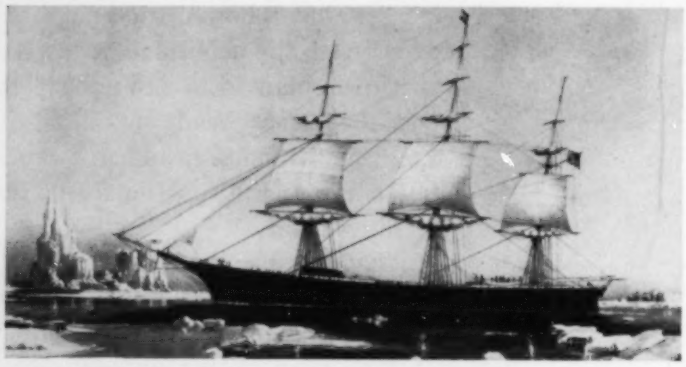
WALKER EVANS—FORTUNE



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Raw material for architecture through the ages is found in "undesigned" structures and objects like these: in the brute power of thirteenth-century Harlech Castle (1) whose function was defense and domination; in a delightful eighteenth-century bridge in Tennessee (2); in Salem carpenter tools (3), Union Pacific railroad trestles (4), clipper ships (5), and new England mills (6). More recently, the clearly articulated machines produced by twentieth-century industry (without much benefit of design) have inspired architects and other artists: e.g., Blériot's mosquitolike plane (7) and Ford's "Model T" (8). Here form followed function without detours—and the results were often beautiful.

ED CLARK—LIFE

7

8

and prejudices of his teen age; nonetheless, the basis of his personality was laid during those earlier years.

The personality of modern architecture (in all its present aspects) had its genesis in the 1850's, the formative years of present-day functionalism. Both Le Corbusier and Frank Lloyd Wright—now apparently poles apart—derived much of their early inspiration from the nineteenth-century doctrines of Eugène Viollet-le-Duc, the French architect and theoretician, who is best known for his restorations of medieval castles. Less well known, but more important, are his attempts to rationalize (or "functionalize") the art of architecture into a logical system with simple rules. Le Corbusier's writings of the early twenties—e.g., his *Vers une Architecture*—read like Viollet-le-Duc brought up to date; and Wright told his architect son to read Viollet-le-Duc, because his writings would give him all the basic education he needed. "What you cannot learn from them," Wright is supposed to have added, "you can learn from me."

Functionalism is habit-forming

Yet nineteenth-century functionalism meant a great deal more to modern architecture than a transition from childhood to maturity. It was a phase in which modern architecture formed certain lasting habits. Two of these habits are especially pronounced in one large and important segment of the modern movement—the segment that is still, today, referred to as "functionalist."

The first of these habits grew directly out of the credo that form must reflect function—or "express" function, as architects like to say. This was paraphrased to mean that all the different elements in a building should be *separately* "expressed": for example, the structural columns and beams should be made clearly visible, inside and out, and separated from nonstructural wall panels and partitions, so that the structural frame would clearly "express" its function of holding up the floors and the roof.

By the same token, the different elements that make up the plan of a building should be sorted out and visually separated, so that anyone looking at the building could grasp, at once, what function was fulfilled by each of the building's elements—e.g., in a school, which room was the auditorium and which were the classrooms; or, in an office building, which was the stair and elevator stack, and which the actual office block (see Inland Steel's showcase, p. 88).

So the first rule of functionalism might be called "articulation." This rule can be found in Viollet-le-Duc's structural analysis, in early European "constructivist" projects and, unconsciously applied, in nineteenth-century American tools, ships, trains, bridges, and other industrial products (see opposite page). Articulation of functionally different parts of a building became the first, lasting habit of functionalist architecture.

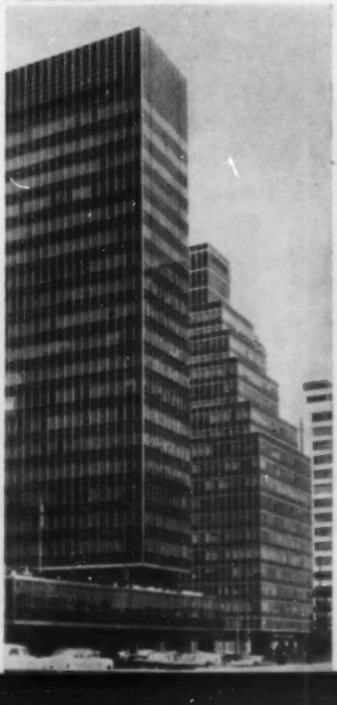
The second habit was acquired in a more roundabout way. Because the early functionalists got much of their inspiration from the machine itself, machine forms became greatly admired. The fact that such forms did not always make much sense in buildings did not matter; after all, Louis Sullivan used plant forms for terra-cotta ornament because natural organisms were something that *he* admired—so why should not machine forms like cylinders, cones, cubes, and other geometric shapes be used by the admirers of machine organisms?

These machine forms first attracted men like the Purist Painter Charles Edouard Jeanneret (better known as Le Corbusier) and the Cubist Painter Fernand Léger. In their earliest work, the crisp, neat, geometric forms of machines became important elements of design. Before long, sculptors like Jacques Lipchitz and Constantin Brancusi translated the machine form back into three dimensions—and it has stayed there ever since. When Le Corbusier said that a house was a machine for living in he meant it in more ways than one.

In short, functionalism had grown up. It had become a highly sophisticated school of thought, with a distinctive vocabulary of simple, geometric forms, of expressive and articulated plans, of clear structures and neat details. The members of the school still paid lip service, on occasion, to "form follows function," to economy and greater practicality. Though they denied it heatedly (having just finished rebelling against "styles"), the truth was that they had created a brilliant new style.

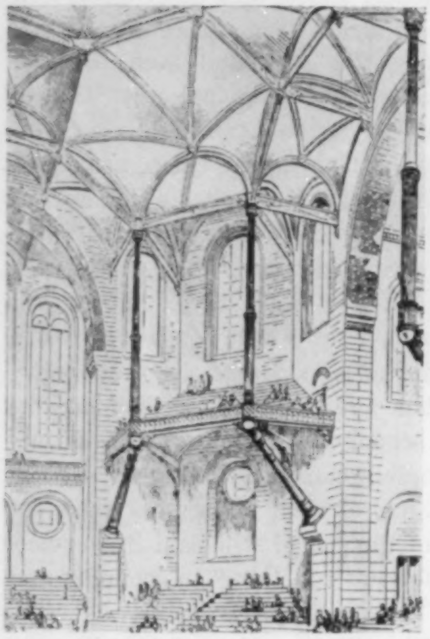
None of this need have come as a surprise. As early as 1920, Le Corbusier had written jubilantly: "Thus we have the American grain elevators and factories . . . the American engineers overwhelm with their calculations our expiring architecture." However, Le Corbusier was not quite so overwhelmed as he may have seemed. For while he was praising functional buildings put up by practical men, he also announced, in the same breath, that "architecture is the masterly, correct, and magnificent play of masses brought together in light . . . cubes, cones, spheres, cylinders, or pyramids are the great primary forms which light reveals to advantage . . . these are *beautiful forms, the most beautiful forms* [his italics]." In other words: functionalism is wonderful—as long as it produces beautiful forms.

WALTER DARAN



Two kinds of functionalism, side by side: Lever House, at the left, is an example of today's sophisticated functionalism—from over-all form to elegant detail, this is a completely integrated design. At the right is a typical Manhattan office pile, created straight out of zoning law, maximum rentability, and stock curtain wall units. It works; all it lacks is style.

“Sophisticated” functionalism



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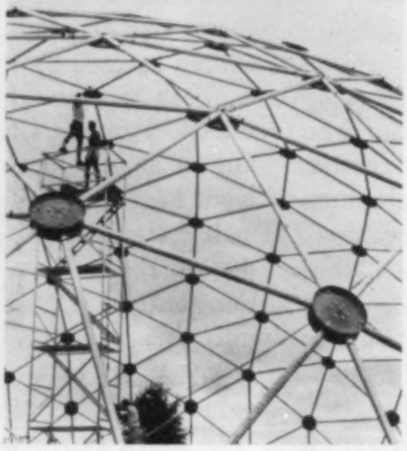
BUCKMINSTER FULLER



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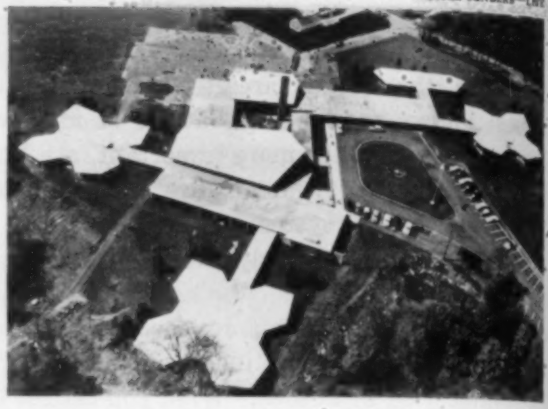
WALTER SANDERS—LIFE



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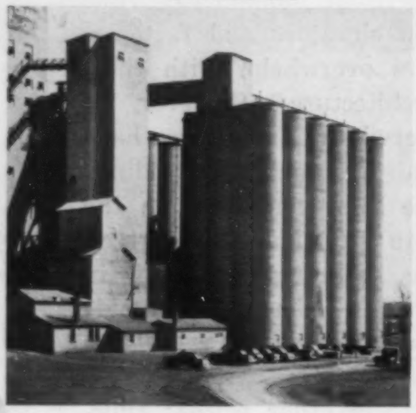
The separation of different parts is the first rule of sophisticated functionalism, laid down by Viollet-le-Duc and illustrated in his 1864 design for a Concert Hall (1) whose iron frame was clearly expressed for all to see. Similar articulation is evident in the geodesic dome by Buckminster Fuller (2) where connections and struts are clearly defined, and in a cluster-plan school by Perkins & Will (3) in which classrooms, auditorium, and gym can be “read” from the outside.

RALPH CRANE—LIFE



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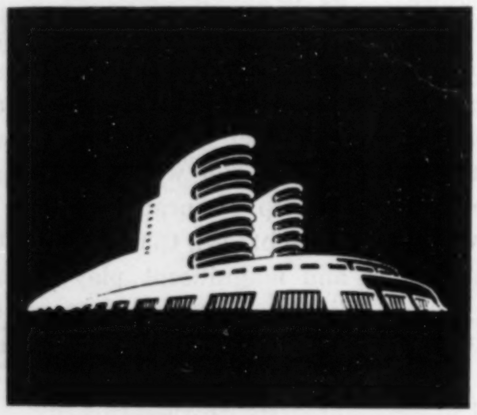

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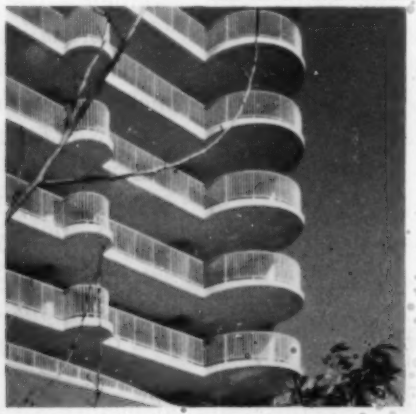
DEAN STONE & HUGO STECCATI



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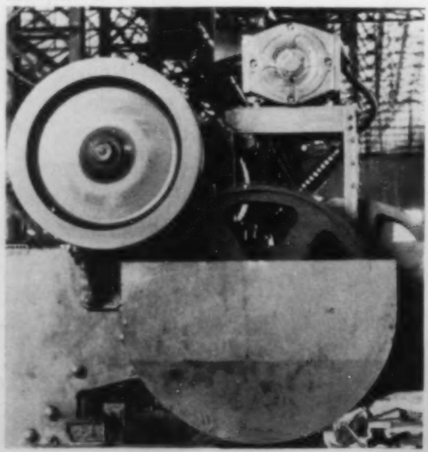
Unadorned geometry as found in American silos (4) fascinated the late Eric Mendelsohn. He translated their forms first into a sketch for a factory (5), later (6), into a row of balconies on a San Francisco hospital—which proved to be quite unfunctional despite its “functionalist” origins. Le Corbusier used machine forms (7) in his early Purist paintings (8), finally applied them to elements in architecture (9). By this time the original function of the machine had been all but forgotten.

JIM BURKE—LIFE



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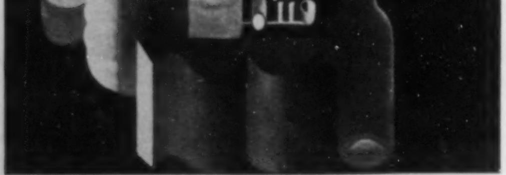
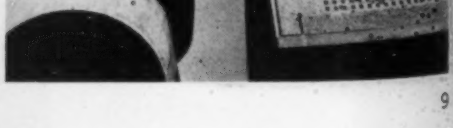


LUCIEN HERVE



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And another architect of the 1920's, the late Eric Mendelsohn, published a book on America showing its factories, docks, and (needless to say) its grain elevators. But when Mendelsohn took this raw material and started playing with it in fantastic sketches of imaginary buildings (see opposite), he was interested in the forms for their own sake, not in their function. And in his Maimonides Hospital built 30 years later, the silo form had become a row of beautifully scalloped balconies!

This is nothing new: artists have always been inspired by visual experiences gained in odd places. Half the models for renaissance paintings of the Virgin Mary were ladies of somewhat questionable repute. *Art Nouveau* architects and craftsmen in the late nineteenth century used plant and animal forms as points of departure in the design of chairs, tables, Paris Métro entrances and apartment houses in Barcelona. And the "functionalists" of today use engineering forms in exactly the same way —as points of departure.

Is beauty a function of function?

But while these sophisticated functionalists were busy in the 1920's and 1930's developing a style out of the raw material of engineering, there grew up, on the side lines, another kind of functionalist. He was the builder, the businessman, the engineer, who really believed all that he had read in the papers about cheaper, more practical, more form-fitting architecture.

Sophisticated functionalists such as Marcel Breuer were telling equally sophisticated audiences at the Museum of Modern Art that "Louis Sullivan did not eat his functionalism as hot as he cooked it"; yet the warning came too late—for the innocent, literal functionalists, who were doing most of the run-of-the-mill building, had swallowed the doctrine hot and whole.

If "form follows function," they argued, does not efficient function automatically produce beautiful form? Well, it seemed to—in some instances at least: How about airplanes? How about some bridges, ships, tools, factories, dams? And if you can produce beauty by some kind of automatic function-computer, why bother with all the double talk about art?

The output of these literal functionalists is all around us today, for everyone to see. Every big American city is studded with office and apartment buildings designed —if that is the word—by some sort of automatic "functional" process: the exterior shape is determined by zoning laws; the exterior surface is papered with curtain wall patterns picked out of a manufacturer's catalogue; the interior layout is determined by rental experts, the core by the stop watches of elevator specialists; the roof is designed by the cooling tower fabricators; and the lobby by the newspaper distributors. Result: chaos—in the name of "functionalism."

Unfortunately, the "sophisticated functionalists" have only themselves to blame. They laid the trap when they began to apologize for the new style by claiming it was less expensive to build and less expensive to maintain. Few, if any, ever came out and said publicly that functionalism was a coherent system of organization, a completely integrated method of putting a building together, and that it should be judged entirely on its own merits.

So now the trap has been sprung by those who saw a great opportunity for what it was—a chance to sell the public a cheaper bill of goods—and quote Louis Sullivan as part of the sales pitch!

How valid is modern functionalism?

The present confusion over functionalism has not been caused entirely by the innocent or the opportunistic. Functionalism needs to re-examine its own premises to see how many of them still make sense. Is it really justifiable to adhere so rigidly to a machine esthetic? Does it really make sense to articulate and to express all things—to separate a building's elements only to have to link them together again afterward?

These questions are being faced by leading functionalists: Le Corbusier, over the past twelve years, has moved away from the "pure prisms" of machine art that once delighted him. His buildings today are full of fluid, sculptural, nongeometric forms that recall elements found in nature as often as elements found in the factory. Walter Gropius abandoned many of his abstract, machine-art forms shortly after he came to America in the late thirties; natural wood, stone, and elements of planting became increasingly important in his buildings. This *rapprochement* with more naturalistic architecture is not unexpected: for the functionalist who articulates his buildings because of what he has learned from machine organisms is not really very far removed from the man who articulates his buildings because of what he has learned about organisms in nature—articulated branch structures, bone structures, and shell structures.

As a matter of fact, the principle of articulation itself is being modified. "Expressing structure" is fine in many kinds of buildings; in many others, however, expressing the structure may turn out to be a big headache. And when you come to expressing mechanical equipment—elevators, or cooling towers—then the question arises, obviously, why not express the plumbing, the wiring, and the heating, too? Moreover, as the need increases for flexible space uses (in schools, in offices, in factories, in almost any type of building), the urge to articulate each plan element must be suppressed; for, after all, the plan requirements may change overnight.

All this is just another way of saying that functionalism, though in transition, is far from dead. It remains a rigorous and demanding discipline, an excellent textbook for young architects, a fine standard by which to judge many a building put up today.

But it is not the *only* discipline, not the *only* textbook, not the *only* standard. Modern architecture has many faces; and functionalism—the sophisticated kind—is only one.

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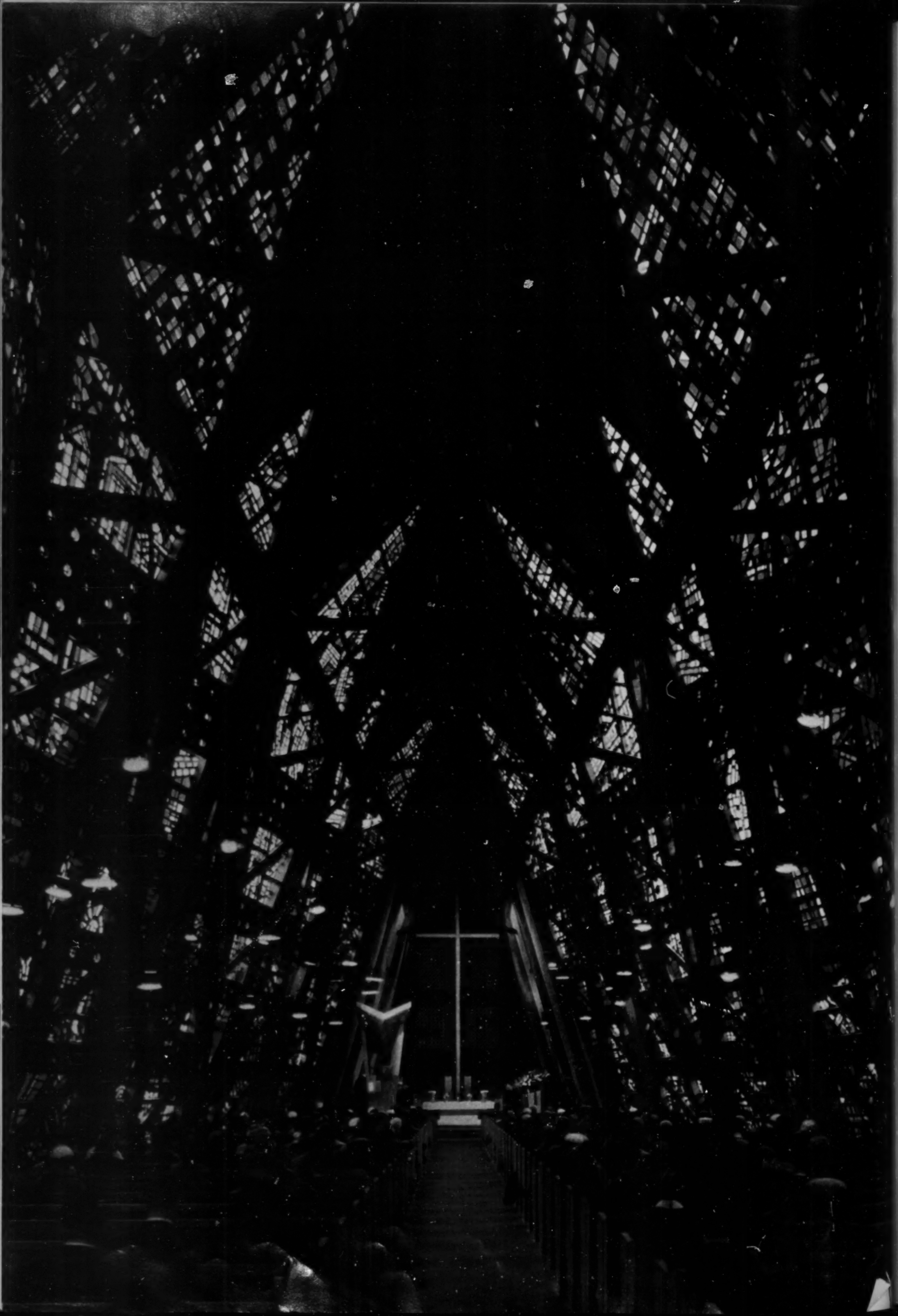
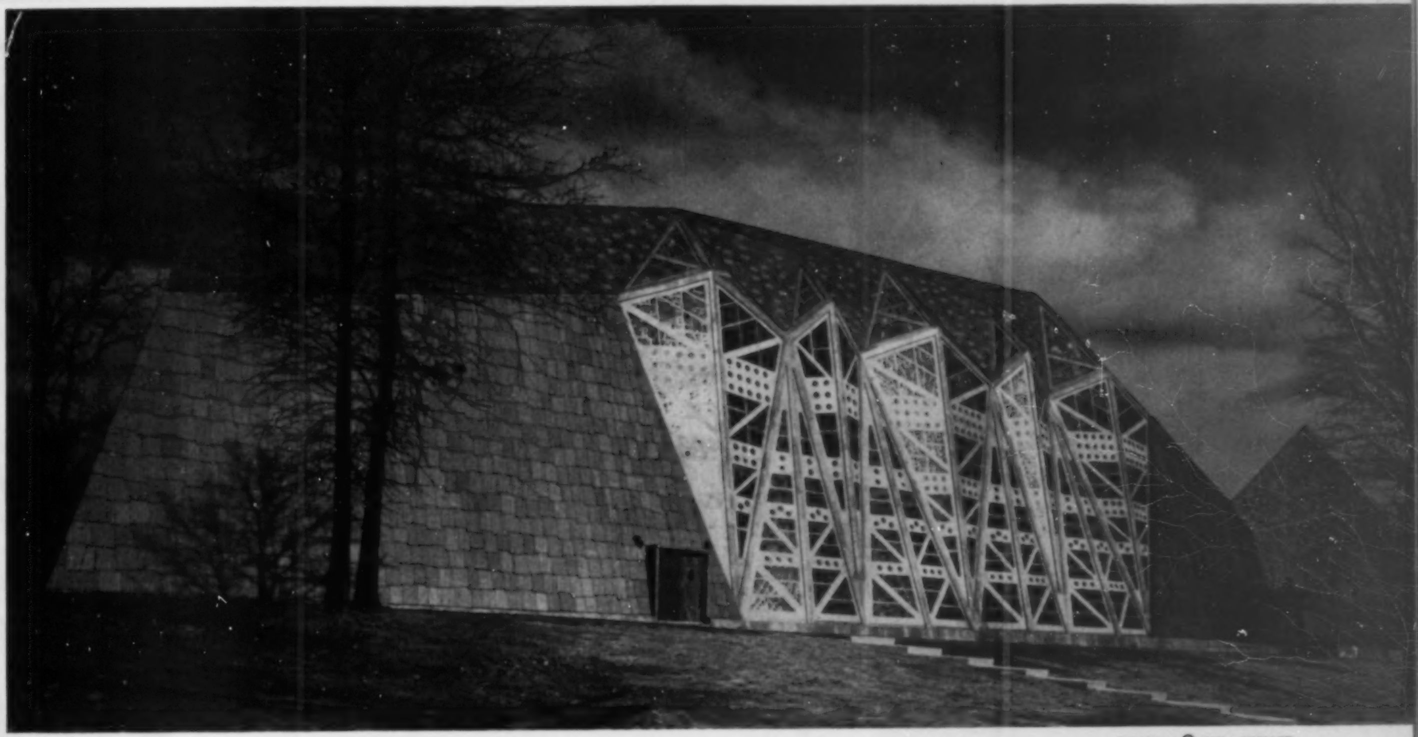


Medieval churchcraft and modern structure are daringly joined in this Presbyterian church which was precast and put together like a giant puzzle.

A brilliant canopy for worship

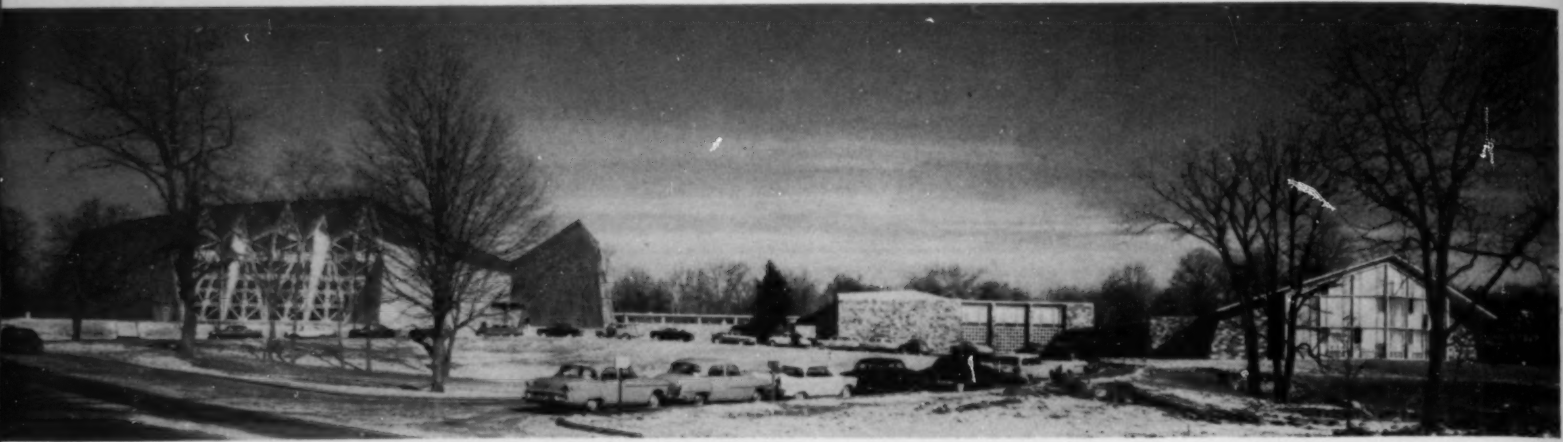


PHOTOS: © EZRA STOLLER

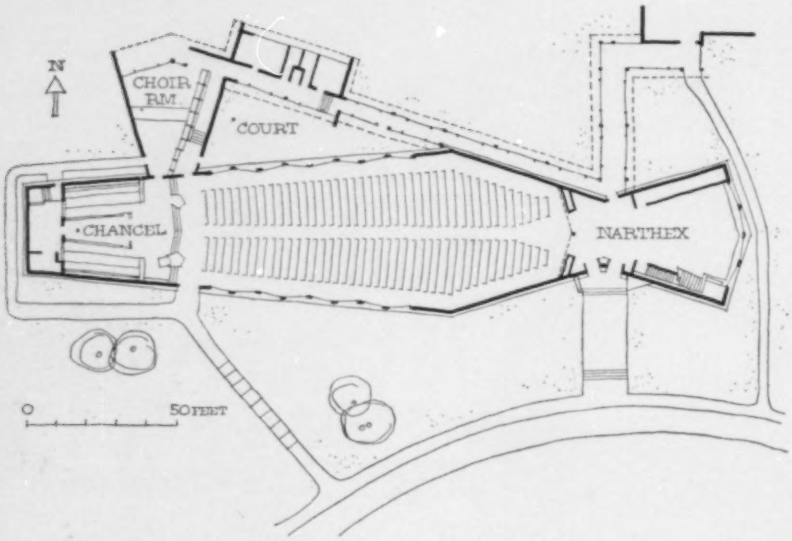
Jeweled light surrounds the congregation in Stamford's bold new church. Glass reaches to the roof ridge in an enveloping play of colored fragments and branching concrete forms. Behind the nave, which seats 670 people, a balcony seats 50 more worshipers or an antiphonal choir. To one side of the thin, stark cross is a tapered marble pulpit, whose canopy is in the shape of an open Bible.

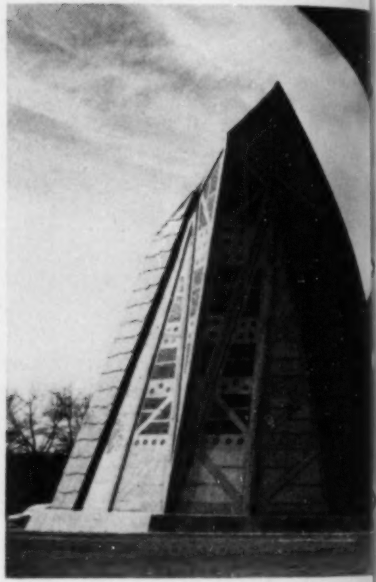
One of the most strangely provocative churches yet built for a twentieth-century American congregation was dedicated last month near downtown Stamford, Connecticut. It is a monolithic structure of precast concrete sections, even glassier in its interior effect than the famed old stained-glass Sainte Chapelle in Paris. Moreover, it carries its glass in triangular patterns right up to the roof ridge, as no other church has done before.

From outside, Stamford's new First Presbyterian Church looms on its grassy suburban site like a great stone whale, flashing back the sunlight from tall, faceted shields emblazoned on its sides (above). As worshipers enter the church through a low and dimly lighted narthex, the infiltrating sunlight reveals the structure and brings to life a breath-taking envelope of inch-thick, multicolored pot glass hand-chipped into rough brilliance (see cover). These glass chunks, set in cement by French Glass Artist Gabriel Loire after designs by Architect Wallace Harrison, carry fragmented scenes of the Crucifixion along the north wall, and of the joyous Resurrection along the sunnier south wall. At the end of this tall, thorny forest of filtered light and silhouetted concrete branches, worshipers look up to a thin, stark cross made of raw planks from the bombed-out library of Canterbury Cathedral. Behind the communion table, a four-keyboard, 100-stop electronic organ, one of the largest

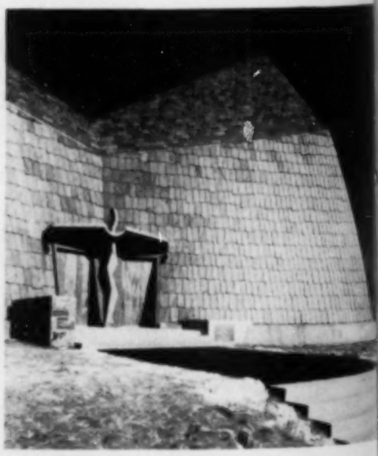


Fish-shaped church, which cost $710,000 to build, is joined to Sunday school, chapel, and community hall (at right).





Narthex, which forms the tail of the fish, is lighted through panels of colored glass.



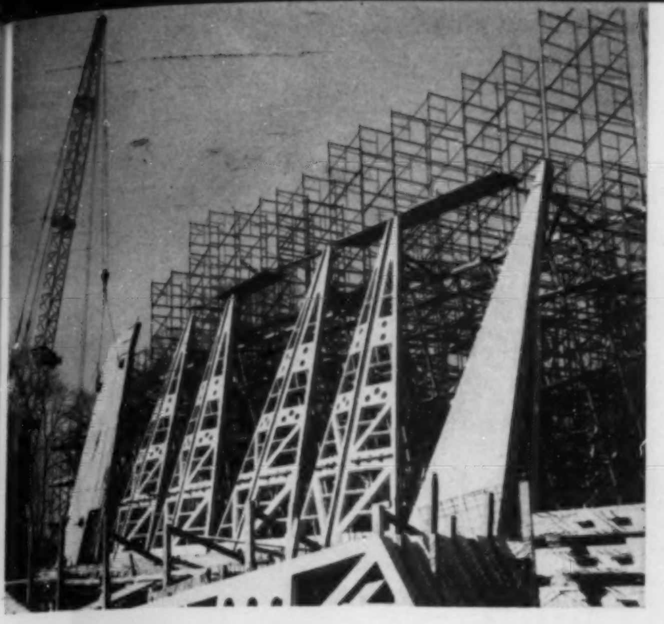
Christ on the Cross sheltering entrance is a modern version of the portal sculpture seen on Gothic cathedrals.

ever built, fills the well-baffled acoustical shape of the sanctuary with sound from 100-odd loud-speakers located above the chancel and rear balcony.

Harrison's first scheme for this church (his first) was a crystalline structure of folded planes which he developed with the help of British Engineer Felix Samuely (FORUM, December 1953). As the design developed, a dip was incorporated toward the rear, where a four-legged bell tower was to straddle the narthex (the tower will be built later as a freestanding element). This dip, combined with the canted planes and splayed shape of the nave, helped give the church the appearance of a huge fish, an early Christian symbol echoed strikingly in the floor plan.

Each of the panels making up the planes of the exterior was precast, ribs and all, in concrete, then laced by reinforcing rods to its neighbors, and concrete was poured in the seams. The result is a rigid monolithic skin-structure wholly different in its structural nature from the separate columns, vaults, and stained glass windows of Gothic architecture which the interior of the church so vividly recalls.

The church's blend of modern technology and medieval mysticism has already exerted a decided impact on both the congregation and the community at large. With its brilliant use of glass, and its constantly revealing shapes and symbolisms, it is a church not easily labeled—nor easily forgotten.



During construction, the church looked like a giant three-dimensional puzzle, some of whose 152 pieces were 35 feet high, and weighed 10 tons. The sections were made in a Long Island precasting plant, trucked to the Connecticut site, and swung into place against falsework props. Reinforcing rods protruding from sections and foundations were laced together across 8-inch gaps, and more rods thrust through the lacing. Then, working from bottom to top, concrete was poured into the seams, bonding sections together into a single, rigid envelope. Smaller concrete panels of colored glass shipped from France were cemented into the openings, and the whole window surface was painted with waterproof acrylic resin. The glass and concrete, both relatively inert materials with a sand base, expand and contract at roughly the same rate and should therefore leak less in highly exposed positions than glass set in lead. Between the windows the walls are shingled with slate.

FIRST PRESBYTERIAN CHURCH, Stamford, Connecticut
ASSOCIATED ARCHITECTS: Harrison & Abramovitz,
Sherwood, Mills & Smith
ENGINEERS: Edwards & Hjorth (structural),
Fred S. Dubin Assoc. (mechanical, electrical)
CONSULTANTS: Felix J. Samuely (structural),
Bolt, Beranek & Newman, Inc. (acoustical)
CONTRACTOR: Deluca Construction Co.

END

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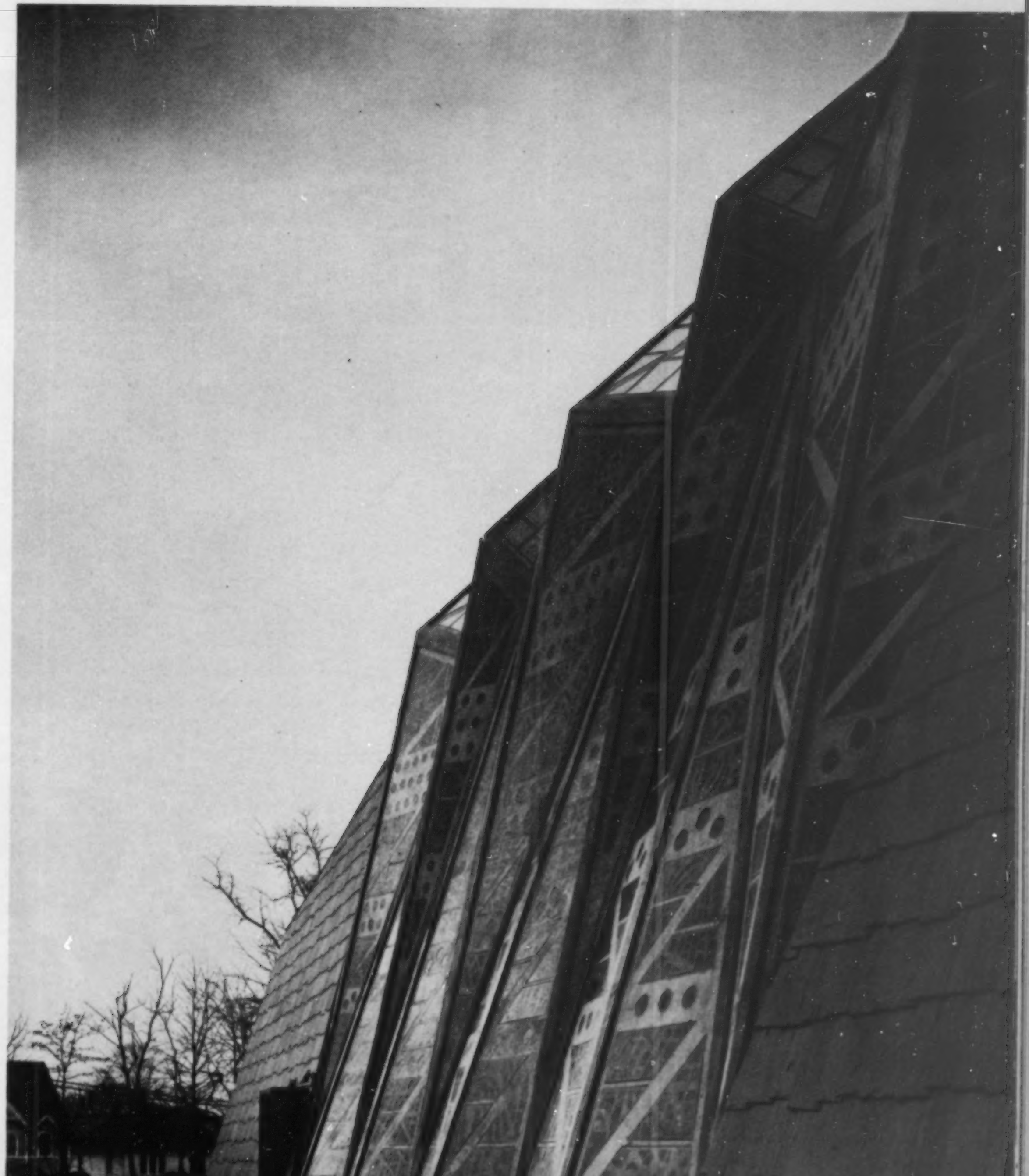
On completion, the structure appears folded or crimped. The design provides strength, and helps diffuse reverberation from the large, hard surfaces of concrete and glass inside. It also gives the exterior a dynamic, crystalline quality.



1.

HARRY RUBENSTEIN

After nearly a decade of federal aid to urban redevelopment, only 17 Title I projects are now in use, and they make up a very mixed bag.

Redevelopment today

Nine U.S. cities now have in use urban redevelopment projects financed in part by the federal government. Under this partnership arrangement, which has become the keystone of urban redevelopment activity, the federal Urban Renewal Administration absorbs two-thirds of the loss taken by a city when it buys slum land, or land to be used predominantly for urban housing, and then resells or leases it to redevelopers for an approved project. Here and on the following pages are 16 of the 17 redevelopment projects substantially completed. They include a surprising range—from luxury to public housing, from office tower to school playgrounds. The only project not shown is a parking lot in Tarrytown, New York.

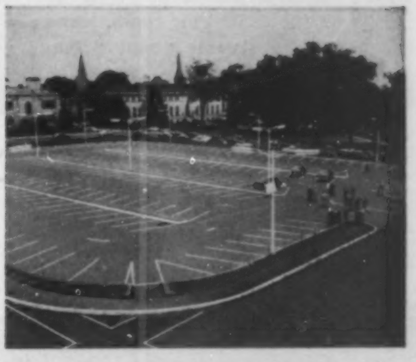
The most striking fact about redevelopment is how slowly it moves through the planning stages. Nationwide, the projects in use—several of them still only partly completed—total only 370 acres, barely more than half of one square mile. And to date, the Urban Renewal Administration has disbursed only $110 million, about 10 per cent of the amount available. But these drop-in-the-bucket statistics should soon become more impressive. For in the "execution" stage—involving some physical activity: relocation, clearance, or construction—are another 182 projects; another $286 million in URA money is under contract; meanwhile 392 more projects have been allotted capital grant reservations.

But while the tempo of urban renewal is finally picking up, the prognosis on quality appears less hopeful. The wiping away of decay and squalor which these first 17 projects have achieved is heartening, but it is sobering to scrutinize the architectural results of the rebuilding. Is this indeed the city of the future, the hope of redevelopment? Architecturally or socially the results do not match the political ingenuity that made them possible.

Perhaps one of the great values of these first projects will be the chance they afford for comparison and observation. As an instance, the two Baltimore projects represent two opposite approaches to redevelopment. The Waverly project (right) cleaned up a blighted pocket in a predominantly good area; the Broadway project (page 113) put a good pocket into a big slum. Which project will do more for its surroundings? Will both work? Among these first 17 projects is much material for a serious re-evaluation of redevelopment.

←

1. **New York:** ILGWU Cooperative Village (left), commonly known as Corlears Hook, a project sponsored by the International Ladies' Garment Workers' Union, replaced 13 acres of slum (top photo opposite page) near the Williamsburg Bridge on the Lower East Side of Manhattan. The project shown beyond the bridge is public housing. Planning for Corlears Hook began three years before the 1949 Federal Redevelopment Law was passed but the land was not acquired until 1952. The four 22-story buildings, completed in 1955, contain 1,672 apartments. Apartment prices range from $1,562 to $4,375, carrying charges from $38 to $168, or an average of $17 per room. Land acquisition costs to the city were $5.9 million, resale price to the sponsor was $1 million, the federal contribution was $3.2 million.



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Manchester, New Hampshire: A two-acre parking lot redevelopment project replaced 18 blighted houses in Manchester's downtown. The lot, completed in the summer of 1956, is operated by the city. Land acquisition costs were $270,000, resale price $160,000; the federal contribution was slightly more than $51,000.

3

Baltimore: Waverly redevelopment project includes in its 19 acres the shopping center and radio tower shown here as well as 351 garden apartments renting for $60 to $80, a park and playground. Occupancy started in 1953. Land acquisition cost was $1.8 million, the resale value was $300,000, the federal contribution $1 million. The land is leased for an annual 4 per cent of the resale value.

4

Philadelphia: Spring Garden Homes, a 5.8-acre block, contains 203 public housing units which were ready in September 1955. Occupancy is predominantly Negro. This is across the street from Philadelphia's middle-income Penn Towne project shown on page 112. Land acquisition costs were $1 million; federal contribution, $851,000.

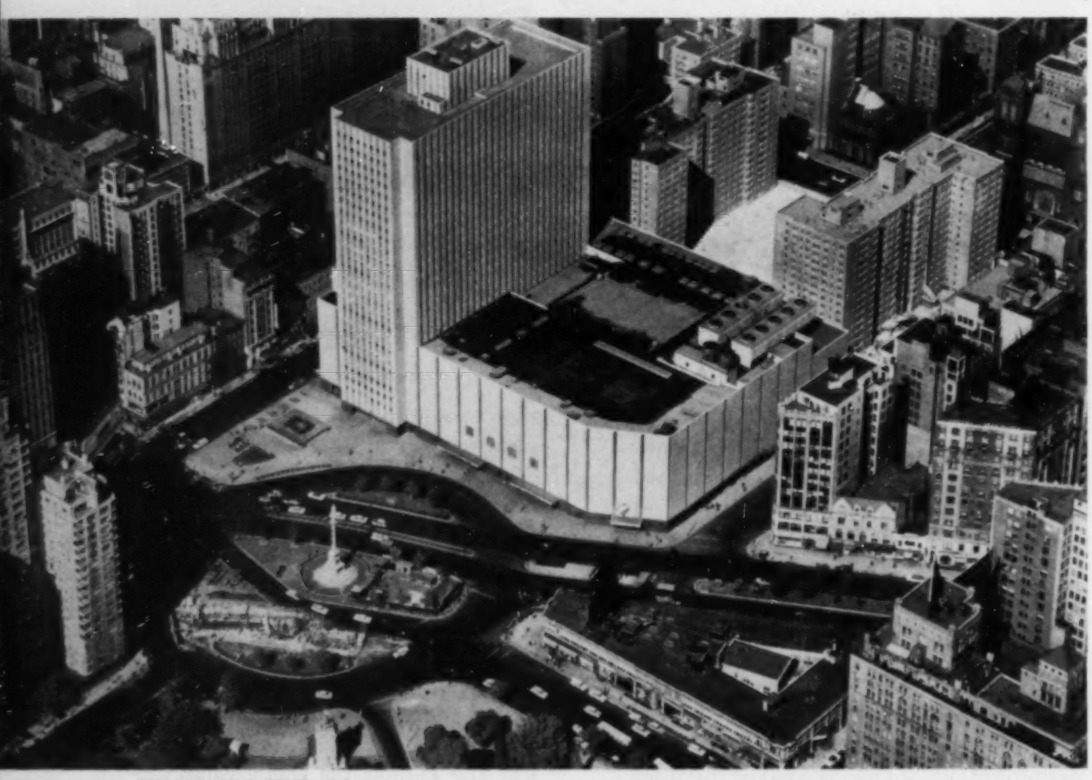
New York: Kingsview Homes in Brooklyn, sponsored by a non-profit citizens' group, has 290 co-operative apartments in five 15-story buildings, completed in 1957. The 3-acre site is part of a planned 20-acre varied improvement. Kingsview apartment prices range from $1,800 to $3,825, carrying charges from $52 to $109, or about $20 per room. Land acquisition cost was about $700,000; resale price was $264,000.

5

6

New York: Delano Village apartments in North Harlem, on a 12½-acre site, will eventually comprise seven 16-story buildings with 1,785 units. Three buildings were completed in 1957 and are fully occupied. Rentals range from $85 to $140. The sponsor is the Axelrod Construction Co. Land acquisition cost was $5.8 million, the resale price $1.6 million, the federal contribution $2.8 million.

7



FAIRCHILD AERIAL SURVEYS, INC.

New York: The Coliseum project at Columbus Circle includes an exhibition hall, office tower, underground garage, and (behind hall) two 14-story apartment buildings (finished in 1957) at either end of a walled private garden. The 600 apartments rent for $125 to $325, an average of $70 per room. The exhibition building and offices were sponsored by the Triborough Bridge and Tunnel Authority, the apartments by private developers. Land acquisition costs were $12 million, the resale price $3 million, the federal contribution about $6 million. The office tower, completed two years ago, is still only 80 per cent rented; apparently rentals are slow because of the Coliseum's West Side location.

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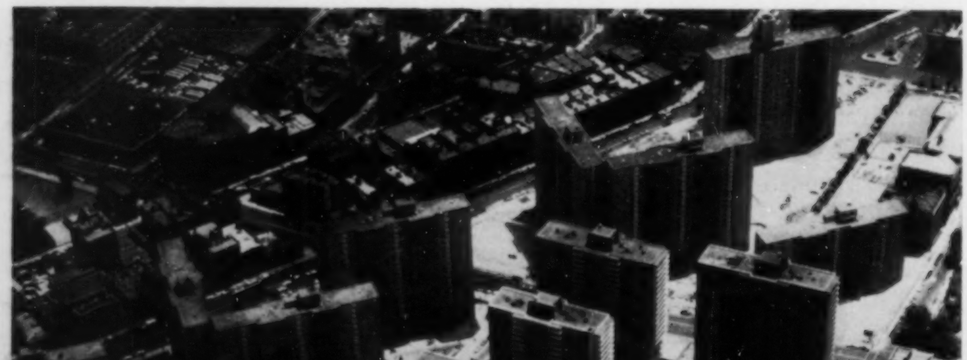
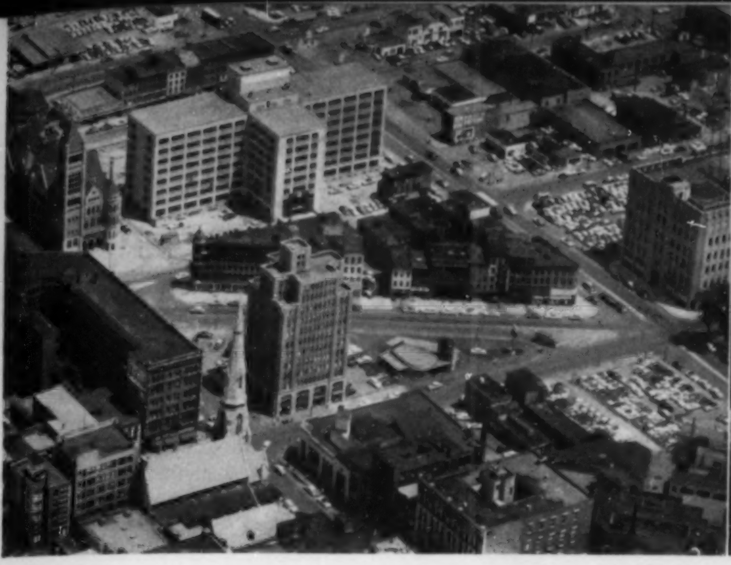


New York: Morningside Gardens, six 21-story apartment buildings on a 10-acre site, were sponsored by 14 neighboring institutions, among them Columbia University, several churches and seminaries. It is bordered (top and left in photo) by eight public housing buildings planned simultaneously with Morningside Gardens, but not placed on Title I land. Prices on Morningside's 990 apartments, which were ready for occupancy by mid-1957, range from $1,925 to $5,090; monthly carrying charges range from $50 to $142, averaging $21 per room. The housing was intended largely for the institutions' staffs, but has worked out as general middle-income occupancy. Land acquisition costs were $5.8 million, resale price $1.3 million, federal contribution $2.2 million.



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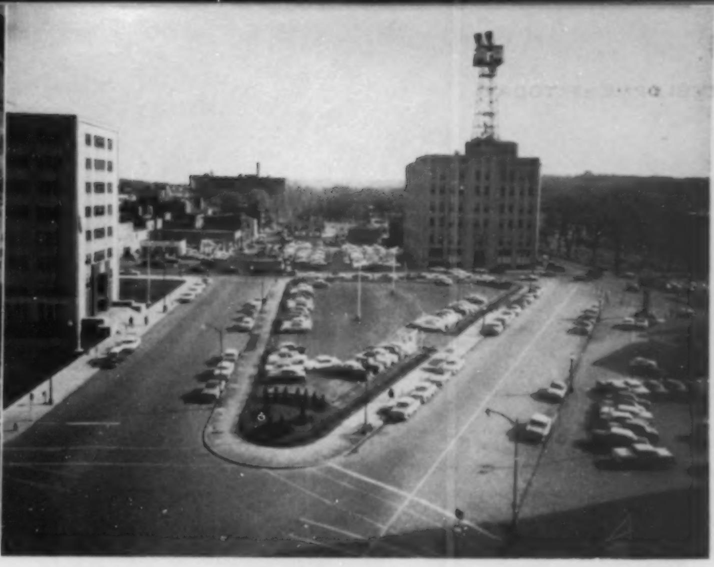


AFTER

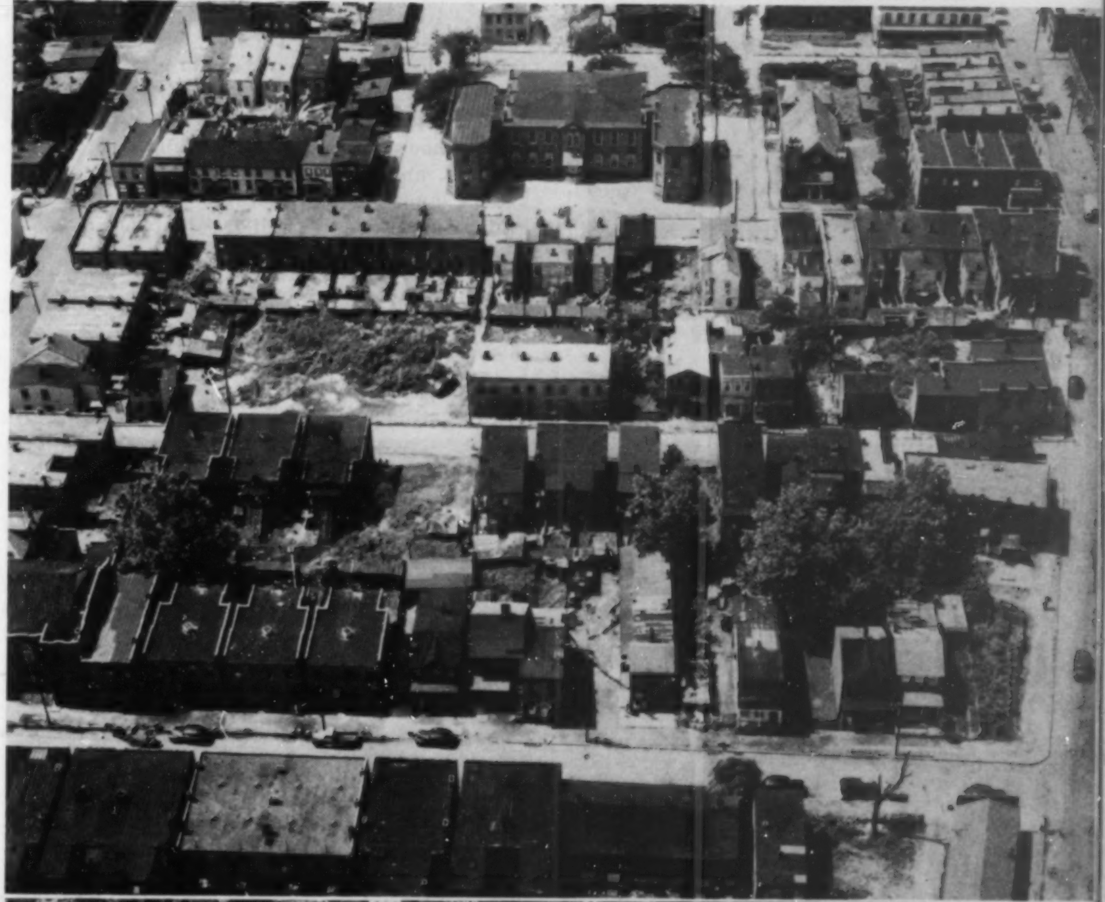
9

Syracuse: The smallest Title I project to date is a triangular traffic island of slightly less than an acre in the heart of downtown Syracuse. Formerly covered with deteriorated commercial buildings (above) it has been converted to a parking lot (upper right), which the city leases to a private operator. At each of its corners is a cluster of evergreens. "We got that close to a park, anyway," says a local urban renewal official. The gross project cost, not yet finally determined, is estimated at close to $1¼ million, the resale price was $440,000, the federal contribution about $400,000. Getting the parking lot took seven years from application for a federal grant reservation in 1950 to completion of the work last November.

Norfolk, Virginia: The slums shown in the upper photo at left have been replaced with the 752 units of public housing, school, and recreation building shown below. This is a 33-acre portion of a 127-acre project which also includes a 40-acre industrial area in process of development, highways, city police station, and a 7-acre downtown site, use undetermined as yet. The land acquisition cost was $8 million, the federal contribution, $3.8 million. The project is part of a massive city redevelopment program which is planned to embrace two other projects and total 400 acres.

10

PHOTOS: (BELOW) PHOTO CRAFTSMEN, INC.: (ABOVE LEFT) ARTHUR CORNELIUS, SYRACUSE Herald-Journal; (ABOVE RIGHT) G. H. BIZZELL



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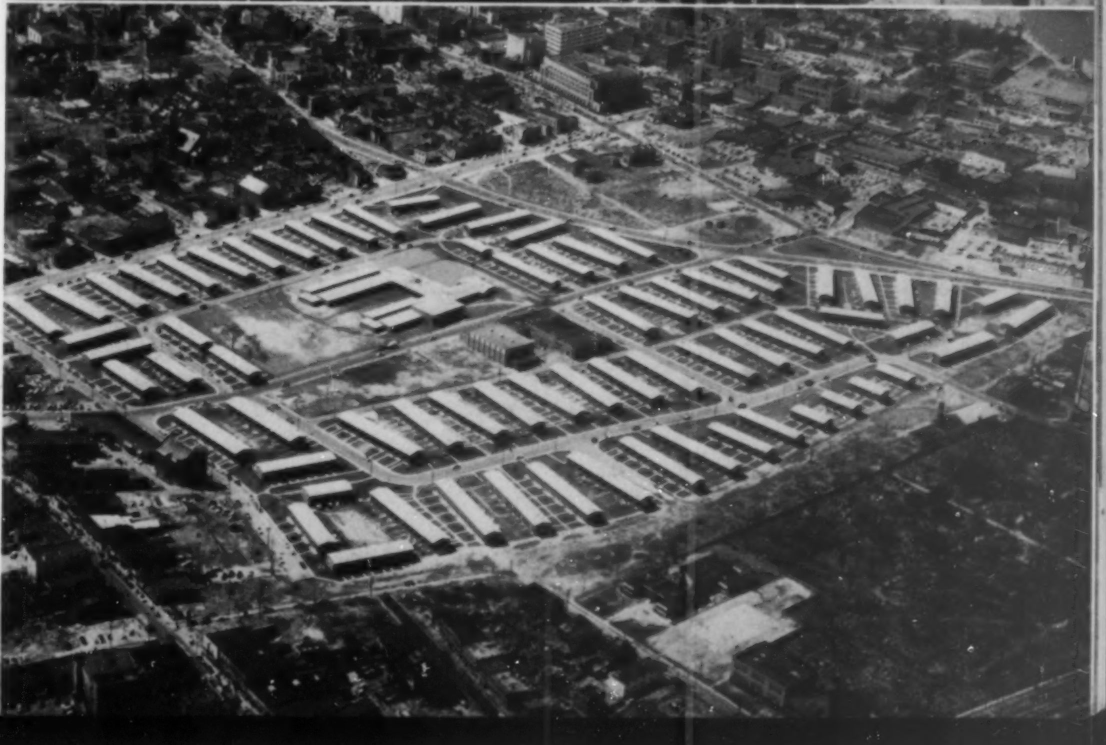
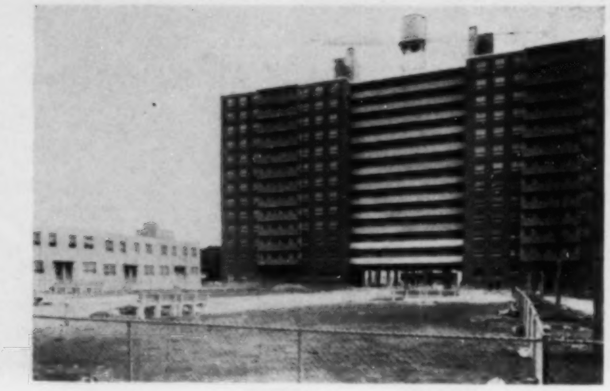


AFTER

Project Architects: (numbers refer to photos): 1. George W. Springsteen. Herman J. Jessor, Associate. 2. None. 3. Cochran, Stephenson & Wing. 4. Hatfield, Evans, Mankus & Krimmel. 5. Brown, Guenther, Booss. 6. Maxon-Sells. 7. Leon and Lionel Levy (Coliseum and office tower). Sylvan Bien and Robert Bien (apartments). 8. Harrison & Abramovitz. 9. None. 10. Lublin, McGaughy & Associates, and associated architects (housing). 11. Louis Shay. 12. John Carver. 13. Paul N. Hesser. 14. Ira Rakatansky. 15. Cochran, Stephenson & Wing. 16. Skidmore, Owings & Merrill.

11



JULES SHICK

←

Philadelphia: Cambridge Plaza Homes, on a 9.3-acre tract, consists of a pair of high-rise apartment buildings (one shown in photo) with 372 dwelling units, and 124 two-story units (left, in photo). All are public housing with rentals of $25 to $65. They were completed early in 1958. Thus far, all occupancy is Negro. Land acquisition costs were $1 million; the federal contribution $835,000. Eventually a shopping center and medical center are to adjoin the project, which is part of a big North Philadelphia renewal area.

12

P. E. GUERRERO

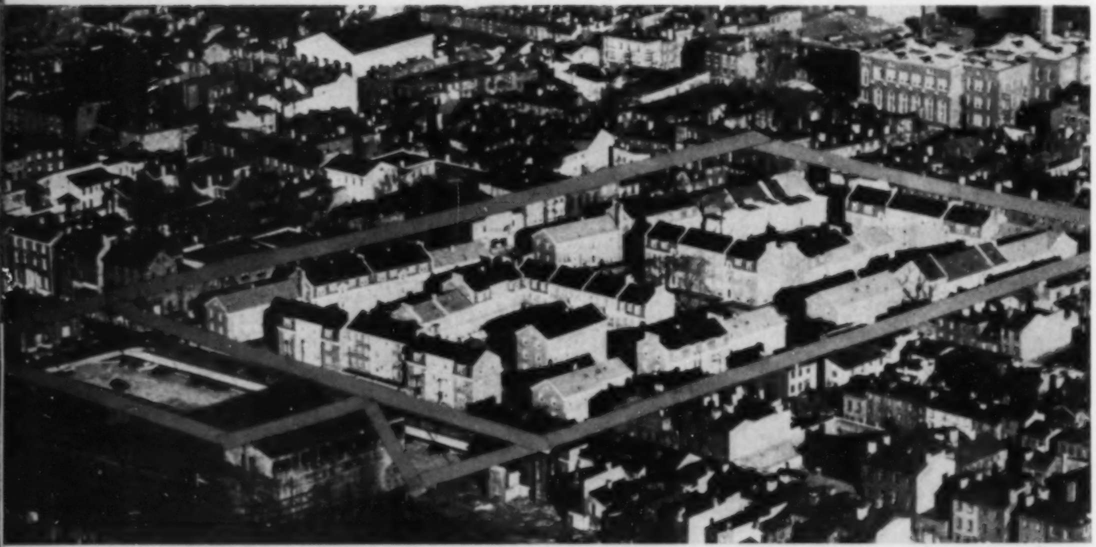
←

Philadelphia: Harrison Plaza, a 10½-acre tract, is the public housing portion of a redevelopment project which is eventually to include also privately built housing, churches, and schools. Harrison Plaza, completed two years ago, includes 188 row houses, a high-rise building with 112 units, and a community building. Occupancy is predominately Negro. The land acquisition cost was $1 million; the federal contribution $850,000.

→

Baltimore: The 30-acre Broadway project is, in effect, an extension of Johns Hopkins Hospital. It includes a 255-room high-rise dormitory (rear, in photo), adjoined by 120 rental units at $60 to $80 for staff and married students, and an almost completed shopping center. Also planned are a 146-unit motel, a medical office building, a church, and a playground for an existing high school. The land acquisition cost was $3 million. The land remains in ownership of the city which leases it to Builder Henry Knott, project sponsor, annually for 4 per cent of the $600,000 resale value. Knott, who also pays full property taxes, in turn leases the shopping center to Shopping Center Developer James Rouse; and the residential facilities to Johns Hopkins Hospital. Federal contribution was $1.6 million.

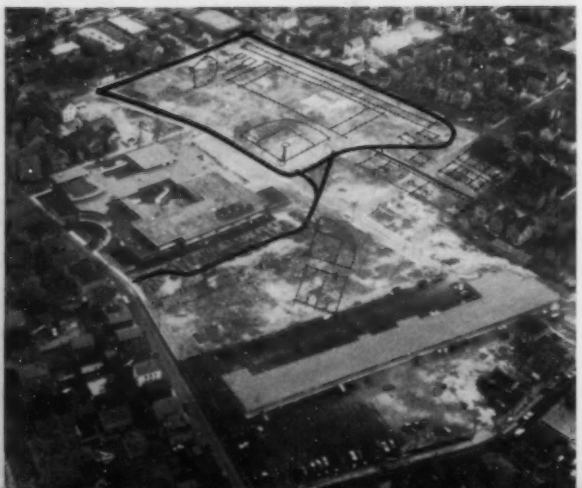
13



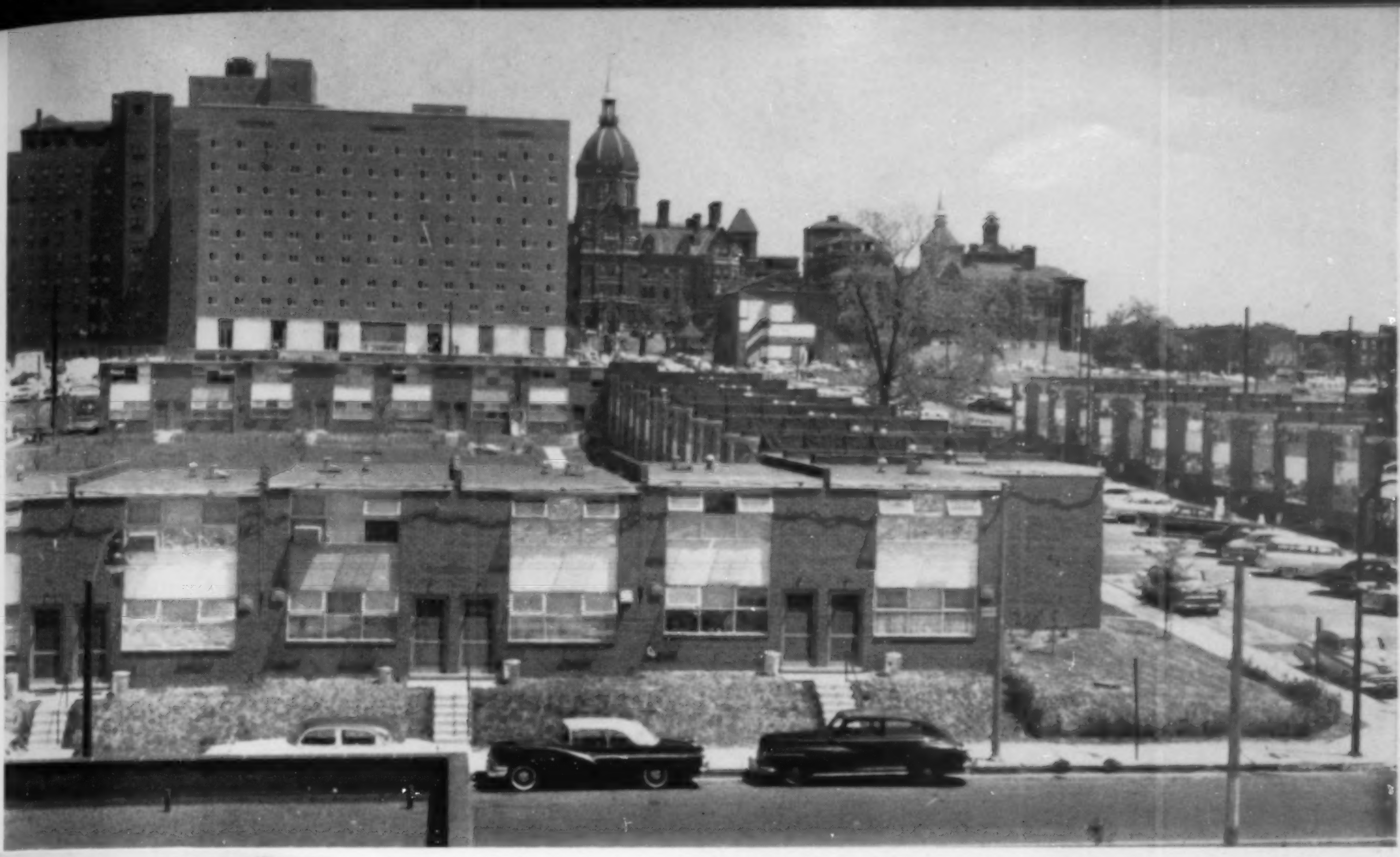
SKYPHOTOS

Philadelphia: Penn Towne, on a 4-acre tract, is a combination of 138 new garden apartment dwelling units and 36 rehabilitated units, built and owned by the city redevelopment authority. Rents range from $55 to $81. Occupancy is predominantly Negro. This project, the first completed under Title I (in 1953), is part of a 16-block area designated for redevelopment; one block has been used by the Society of Friends for an experimental rehabilitation project; the Society has dropped its option on three other blocks. Land acquisition cost was $427,000; the federal contribution $262,000.

14



Providence: Willard Street commercial project—a shopping center in the foreground of the airview—is the only redevelopment enterprise, thus far, sponsored by those who formerly occupied the site. Thirty merchants (since dwindled to 18) of a rundown Kosher shopping section banded together to buy the land and construct a $1.7 million center. A city school (left in photo) and its grounds comprise the rest of the project. The sites total 15.8 acres. Land acquisition cost was $2 million, federal contribution, $1.6 million.



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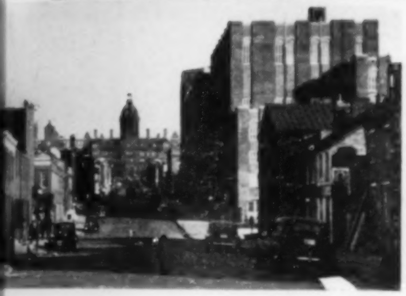


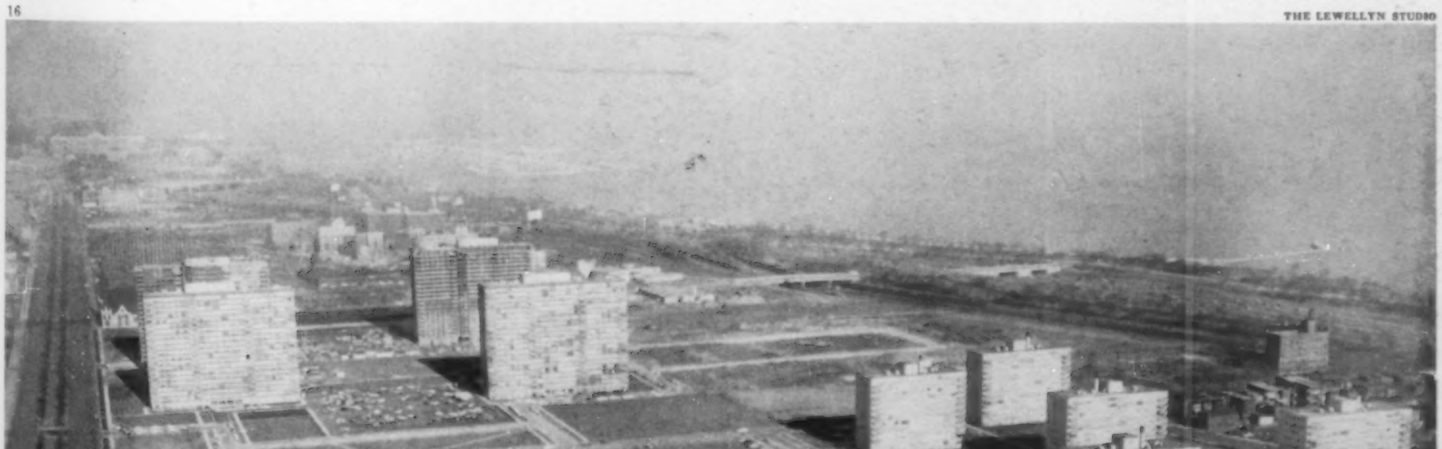
BEFORE

Chicago: At Lake Meadows, the 101-acre redevelopment tract carved out of the South Chicago slums (below), the New York Life Insurance Co. has completed five 12-story apartment slabs, two 21-story slabs, and a shopping center. Two more 21-story slabs and additions to the shopping center are under construction. In the planning stage is a sixth 12-story slab which will bring the total housing units at Lake Meadows to more than 2,000. Rentals average $30 per room; occupancy is predominantly Negro. The city is building an elementary school and plans an 8-acre public park adjacent to the 2-acre school site.

Construction of the project began in 1952, is scheduled for completion in 1960. New York Life paid a total of $1,786,000 for its 71 acres. The land acquisition cost was slightly more than $14 million; $9 million was contributed by the federal government. New York Life's construction costs are estimated in excess of $23 million; its expectations of return are said to be "favorable compared with similar investments." END

16

THE LEWELLYN STUDIO



The London look

PHOTOGRAPHS BY WALKER EVANS

TOP FLAT
PRESS

Ordinary street objects in the world's great cities speak their own national languages, complete with accent, inflection, and tone. On these pages is a selection of pronounced Anglicisms.

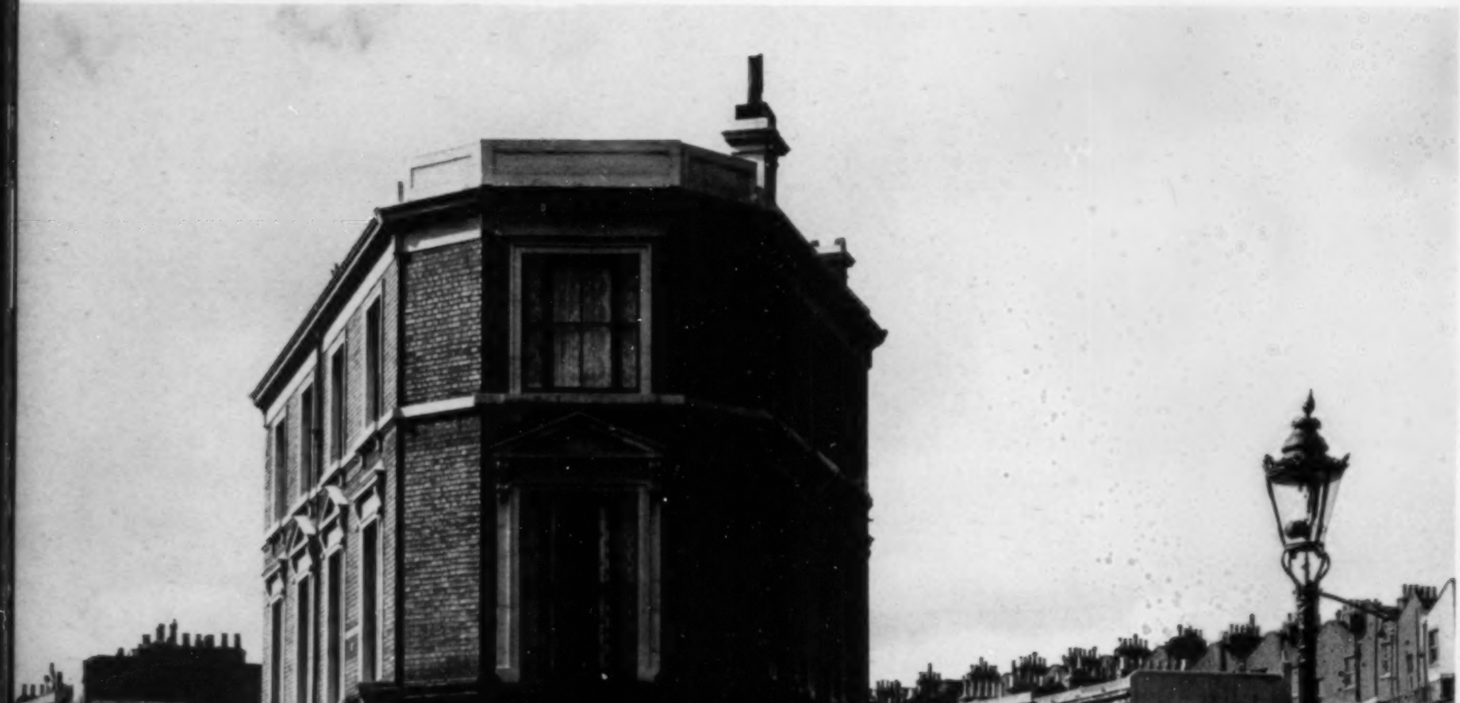
A visitor in London can have a field day collecting quintessentially English sights, not in the guidebook, Westminister Abbey sense, but almost underfoot, in the sense that what a city uses hard every day inevitably says a lot about its life. There is the metropolitan taxicab, that well-behaved black beetle; but this is perhaps too obvious a piece. Subtler quarry would be the plain old single lamppost (overleaf). This stalwart creation seems about to salute; it is top-hatted, and its outline clearly resembles the British male figure.

Beyond are the glossy, explicit doorbells ("PRESS!"), the sweaty miniature switch engines in the stations, the rythmic white casements lining the side streets, and the chimney pots everywhere marching to infinity.—W.E.

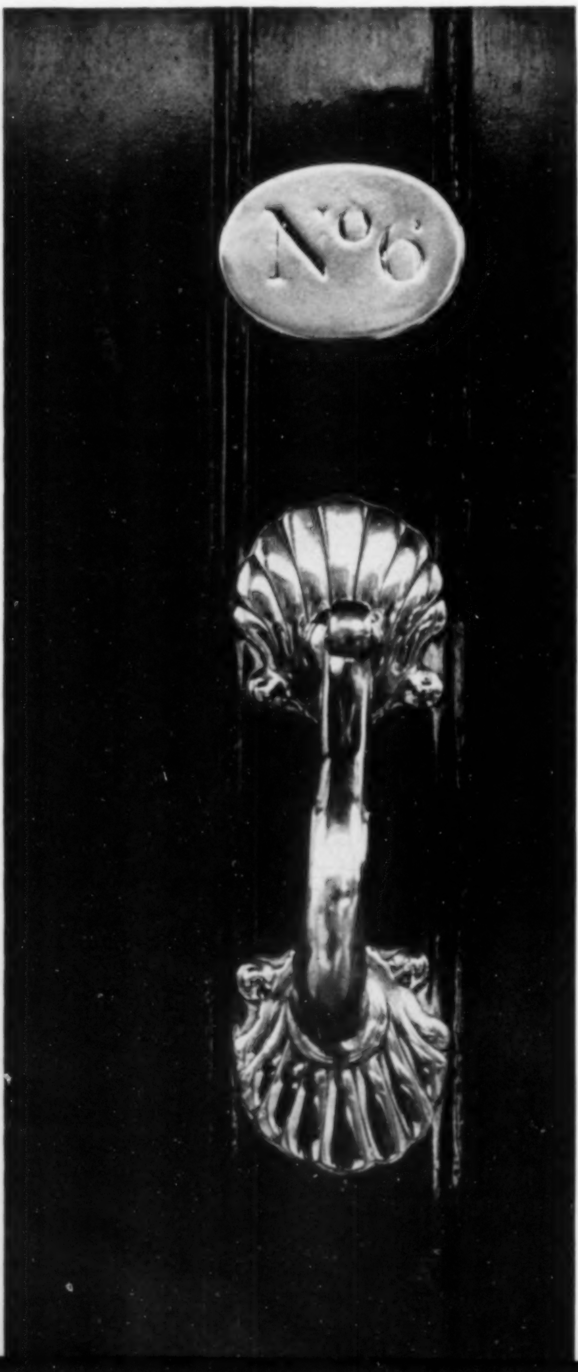
London today strikes one—deceptively —as being a huge repository of Victoriana. At left is the iron Gothic shed and a shunting engine at the grand old, choking old Liverpool Street Station.

Sunday mornings, London streets are stage sets waiting for the actors. Below: the junction of Cirencester Street and Woodchester Street in Paddington is a perfect scene for a rousing manhunt, or at the very least, a pleasantly sordid, heartbreaking tryst.

WESTBURY TERR'CE
WESTBURY TER.



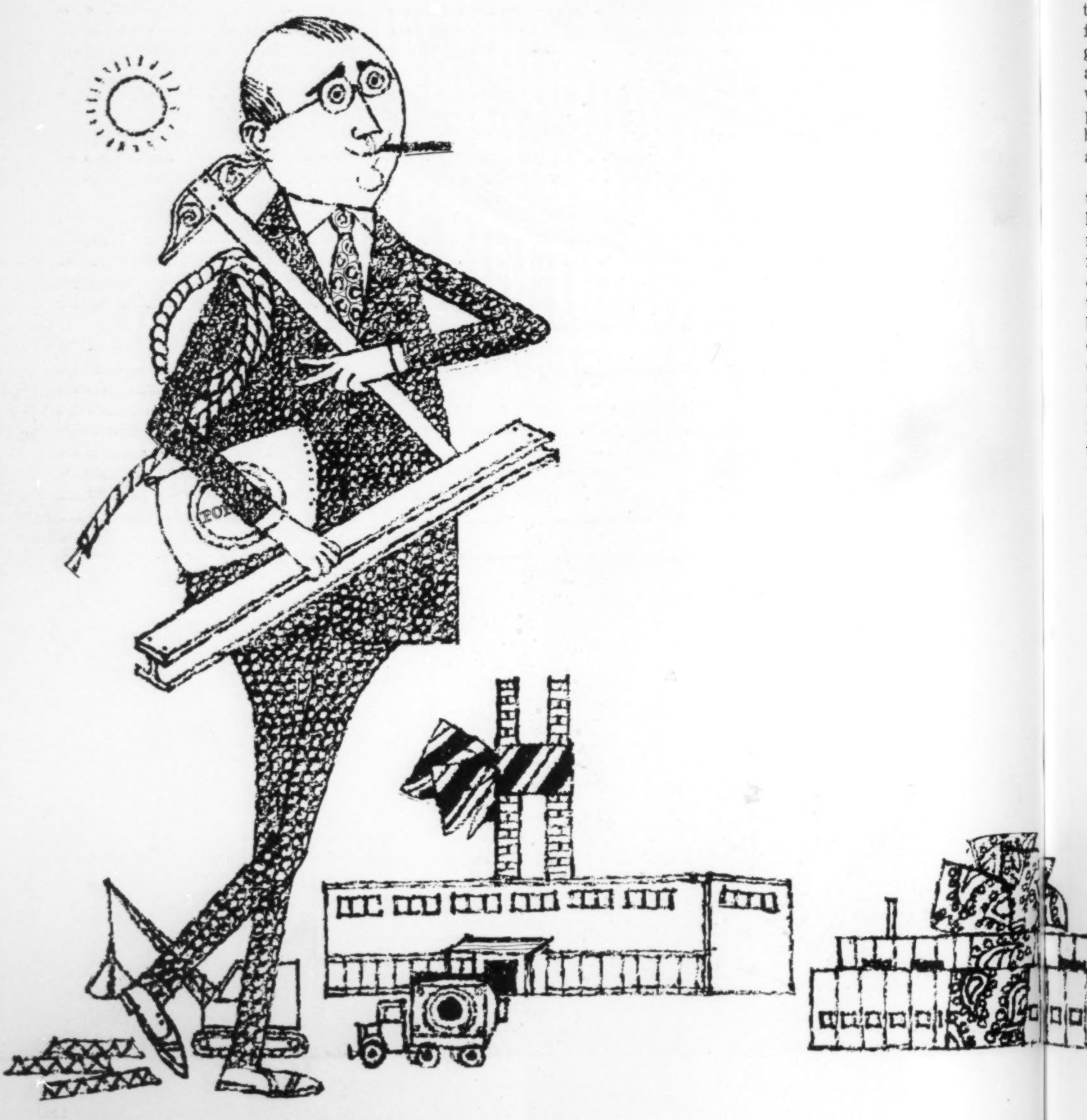
Objects like the handsome little oval number plate, below, are on the way to extinction, not from war, flood, fire, and pestilence, but from the ravages of the upstairs parlormaid's polishing cloth.



END

Those worrisome package builders

The design-and-build package construction firms have made strong inroads into industrial building. What are architects doing about it?



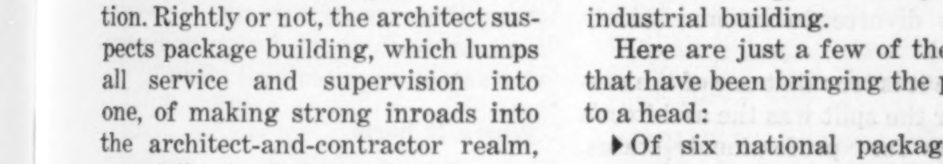
"Why should we hire an architect?" grumbled a top executive of a large Midwestern pharmaceutical company. "When we build a factory we're after just three things: good work space; fast, sound construction; and a price we can count on from the start. Sure, we'd probably get something more artistic from an architect. But for the sort of thing we want, where time counts, these package-deal outfits that can handle both the design and the construction are pretty hard to beat."

The independent architect feels that such attitudes hit at the core of his service. His appeal, he feels, lies not alone in his creativity but in his freedom from financial interest in either the materials he specifies or the construction he supervises. He belongs actually to an architect-and-contractor system. The contractor's competitive bidding supposedly insures lowest prices, and the architect as owner's representative and later as mediator safeguards execution. Rightly or not, the architect suspects package building, which lumps all service and supervision into one, of making strong inroads into the architect-and-contractor realm, especially in industrial and commercial building. "Package firms" such as the Austin Co. have been around for a long time, but now they seem to be gaining ground.

Architects would be pained to admit it, but it is nevertheless true that the success of the package deal is, at least in part, due to their own omissions. Package building, for all its design shortcomings, does fill a demand for quick, fixed-price construction in routinized fields, and this is something the architect, acting alone, is not presently equipped to deliver. Only reluctantly has the profession come around to admitting this, and it is still a long way from deciding what to do about it. But it has finally begun to look at the problem seriously and in terms of what is really the essential decision: whether to move closer to construction and the package way of doing things where the market requires it or to stick by its officially adopted ethics and risk the chance of a dwindling, secondary role in industrial building.

Here are just a few of the things that have been bringing the problem to a head:

- Of six national package firms operating in the general industrial-commercial area, all have had sizable increases in their gross revenue in the last decade, and some show far bigger gains than the 160 per cent jump in spending for new private industrial and commercial construction as a whole. Over-all figures on package dealing do not exist. But it is quite possible that package jobs today represent half or more of all new industrial, commercial, and public utility construction.
- The American Institute of Architects, which has long condemned package dealing on ethical grounds, set up in 1956 a committee to map specific steps to combat it. The group, now headed by Atlanta Architect Herbert Millkey, has so far produced one report (still unreleased) and is now working on another.
- The National Joint Cooperative Committee, a liaison group between the AIA and the Associated General Contractors, has recommended that the AGC take steps to discourage its 7,000 members (some of them package dealers) from "entering into the design field and offering a combined service of preparing plans and specifications and construction. . . ." In return, AIA is to discourage its



12,000 adherents from trying to eliminate the general contractor by working directly with subcontractors. (This practice, while not widespread, has been advocated by some architects as a way of countering the package dealer's claim of "undivided responsibility.") AIA's board has passed a resolution, AGC's has not.

▸ Of 1,716 architects who answered a FORUM survey last winter, 94 per cent showed concern about the package deal problem and offered proposals for what to do about it. Nearly 80 per cent of those answering believed architects needed to publicize the advantages of their work, and 18 per cent thought they ought to take on more of the package builders' functions. Among industrial architects interviewed later by FORUM, all considered the package issue serious, and except for a minority of firms—notably larger ones such as Giffels & Rossetti; Albert Kahn Associated Architects & Engineers; and Smith, Hinchman & Grylls Associates — all considered the package deal problem more serious today than ten years ago.

Two-sided problem

Taken together, these incidents suggest, at least in part, the peculiarly dual nature of the package-deal problem today: it involves not only competition but also ethics. Package deals, which at their broadest may include preliminary planning and site location, engineering and design, preparation of working drawings, materials purchasing, construction, and arrangement of financing, in short a complete "turnkey" job, strike directly at the economic life of the independent architect by taking away work he might otherwise get. (Actually, the independent architect can provide all these services except two: purchasing and construction.) But beyond this, package deals hit at what the architect believes, or at least subscribes to. "An architect shall not engage in building contracting," says the AIA's Mandatory Standards of Professional Practice, and implicit in this is the judgment that anyone who does design and build is something less than chaste.

The dividing line between design and construction is relatively new. In continental Europe, where the tradition of the "master builder" is still entrenched, some architects have always done building, and even in the U.S., early nineteenth-century designers showed no compunction about getting involved with brick and mortar (in Latin America they still show none). Not until 1857 when the AIA was founded did U.S. architects start setting up a formal separation between the two functions. And after that it took another 50 years or so—during which buildings became increasingly complex—for the divorce to become widely accepted.

While it is true that one of the reasons for the split was the architect's striving for professional status, probably the strongest factor was an ethical conviction. To build and to design was to serve two masters. The architect could not, as a designer, protect his client's interests and achieve a standard of excellence in a dismayingly complex creation if he was also protecting his own interest to make a maximum profit as a builder. Loyalties would be too divided.

In essence, this is the argument that the architect still levels against the package dealer: that a builder cannot ever throw himself completely on the owner's side. "The place where the package dealer falls down," says Architect Herbert Millkey, "is in design and professional service. You just can't get first-rate design from someone who's thinking primarily of the easiest, cheapest way to put a building together. Millkey cited examples which could apply only to a low-grade operator, who might throw left-over materials into a job just because he had them on hand and—Millkey inferred—without regard to exact requirements of the owner. In other words, he designs to meet his own needs, not the client's. That's the whole trouble with the system. The package dealer is primarily interested in making money, and he can get away with it because there's no one to check on him."

There is undoubtedly point to this charge. Yet some package builders have been around a long time—The Austin Co., for instance, was set up in 1904—and they have by now developed a fairly standard answer to this criticism. "Look," says Harold Hallstein, Austin's executive vice president, "we wouldn't be in business today and doing 75 per cent of our volume in repeats, if we weren't satisfying our clients and giving them their money's worth. We worry just as much about design and service as any architectural office."

Where it hurts

Actually, very little is known about the package building industry as a whole today, even by those who are part of it. The reason lies in the make-up of the industry itself: most of the firms are closely owned, and many are not even incorporated. They are not required by law to divulge their economic secrets, and by and large, they do not.

Only within broad boundaries is it possible to get an idea of the size of package building today, and the trends that are at work within it. By taking the firms which operate nationally, and which will give at least limited statistical data about themselves, some facts can be assembled. Here is FORUM's appraisal, perhaps the first yet made, of just where and how hard package building is hitting the architect:

Heavy industrial construction. The amount of competition here is relatively small, but for a peculiar reason. Actually, the design and building of mineral process plants, steam and hydro power installations, steel mills, petroleum and chemical facilities is a stronghold of the engineer-constructor. But most architects do little about it. Few firms, even large architect-engineer offices, are equipped to handle this heavy construction—or even want to (the amount of building design in many of the plants consists merely of putting an umbrella over the process; some installations do not even have walls). Mainly, the big package builders which dominate this field —among them Stone & Webster Engineering, Ebasco Services, Bechtel Corp., C. F. Braun & Co., Arthur G. McKee & Co., United Engineers & Constructors, M. W. Kellogg, Brown & Root, Kaiser Engineers, and F. H. McGraw—tend to stick to heavy industrial construction and only a small part of their work is in building for general manufacturing. (One notable exception: Brown & Root, which last year took in $52 million, or about 18 per cent of its gross volume, from package deals on general industrial plants and commercial buildings.)

General industrial construction. This is the sector where the architect and the package builder collide head-on. In almost every type of general industrial building—foundries and fabricating plants, assembly lines and research laboratories—the architect runs into open and bitter competition, not only from the big, national package firms, but from prefab firms (e.g., Butler Manufacturing, Armco Drainage & Metal Products), which manufacture standardized steel buildings, and local package dealers as well.

Of the big general package firms, two of the biggest are Austin and the H. K. Ferguson Co., which since 1950 has been a subsidiary of Morrison-Knudsen. Both have their headquarters in Cleveland—Ferguson was founded, in 1918, by the ex-secretary of Austin—and both operate across the country through district offices (Austin has eight, Ferguson five). For the past three years, Austin's gross income has been averaging about $150 million a year, with three-quarters of this coming from package deals in the general industrial area. Ferguson had gross revenues of $90 million in 1957, but about 20 per cent of this was for general contracting work, which Austin does not do. Of its package-deal volume, close to 80 per cent was in process work, for although Ferguson seeks general industrial jobs, it specializes in chemical construction.

On the whole, the figures of these two companies, and those that can be gleaned from three or four others, do bear out the suspicion that there have been gains in package dealing, and that in some cases—but by no means all—the gains have been larger than the increases for industrial construction as a whole. Ferguson's revenue of $90 million last year, for example, was only 105 per cent greater than its average gross for 1948, 1949, and 1950, compared with a gain of 127 per cent since 1948 in spending in current dollars for all private industrial construction. Austin's rise has been only 70 per cent over its average revenues for 1948, 1949, and 1950. Against this, Walter Kidde Constructors (volume: about $60 million last year) shows a 200 per cent climb in revenue over the early postwar years, and Wigton-Abbott, which does about $30 million a year, mainly in East Coast research laboratories, has had a 120 per cent jump in the last decade. Prefab companies, whose stock in trade is the ready-to-assemble warehouse or factory, say their gains in volume have ranged from 100 to 400 per cent since 1950.

Commercial building. While there is some package dealing in the construction of stores and warehouses by companies such as Austin, the really sharp competition in the commercial field is in the design of banks and offices for savings and loan associations. The biggest part of the business architects have lost in this field has gone to one firm, Bank Building & Equipment Corp., which in terms of design is probably the most criticized of all package dealers. (Bankers seem to be notoriously easy targets for poor architecture.) Since 1947, Bank Building has boosted its gross sales from $5.3 million to $20 million, a gain of close to 300 per cent (part of this income comes from equipment sales and part comes from a subsidiary, Design, Inc., which builds and designs hotel night clubs, barrooms, and motels).

There is still not much package dealing in office building. Some dealers — notably Walter Kidde — do, however, handle a sizable amount of office contracting work.

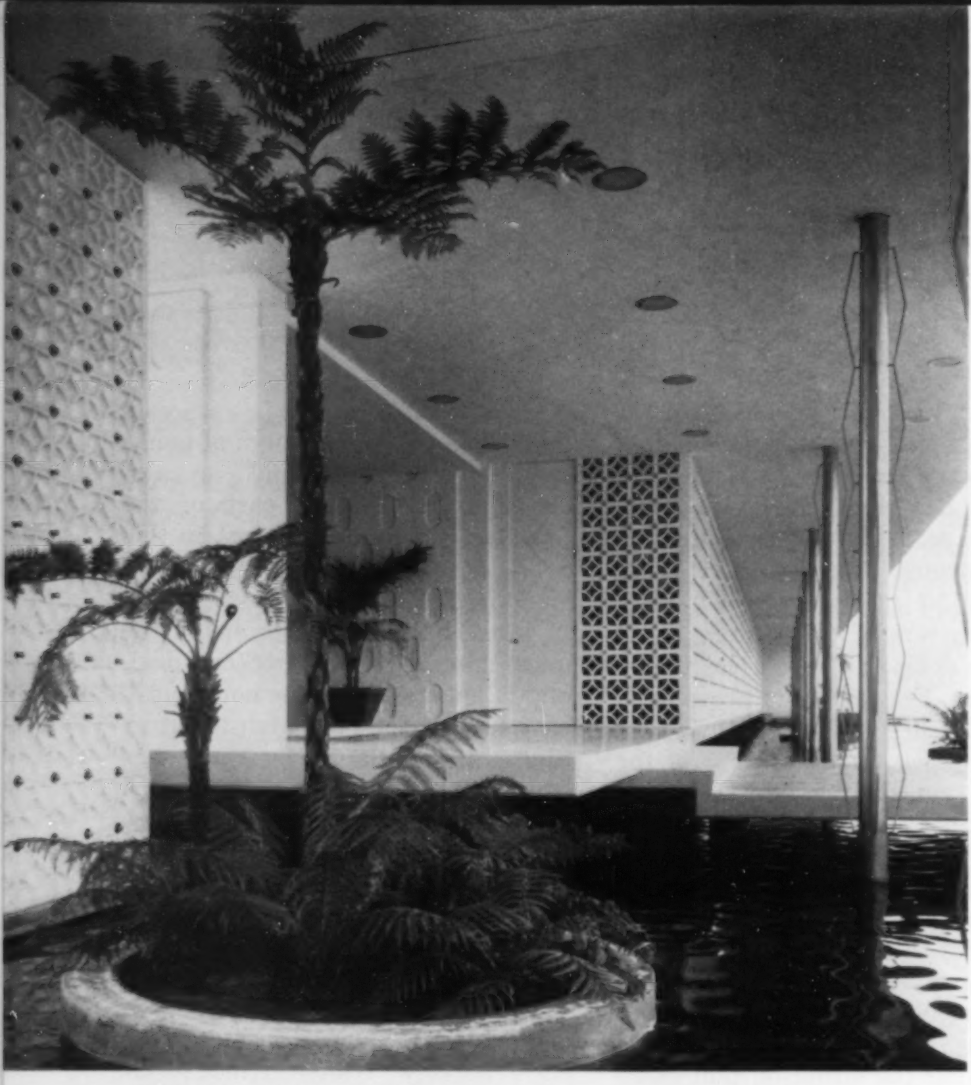
Schools. Some competition has been cropping up here, notably from local prefabbers and dealers. But the package inroads have been relatively small, and the field still belongs overwhelmingly to the architect.

What makes it sell

Just what is it about package building that has made it grow? Architect Walter Gropius, who is certainly no partisan of the engineer-constructor but who does hold to the idea of the master builder, has said that "when a client is in a building mood, he wants to buy the complete package for a fixed price and at a definite time of delivery. He is not at all interested in the question of the division of labor between architect, engineer, and contractor. Since he senses subconsciously that it is rather artificial to keep design and building so wide apart, he usually concludes that the architect is the unknown 'X' in his calculations, in terms of money as well as time."

While this perhaps overstates the case, it is true that for many clients *time* is the Number One reason for

continued on page 190

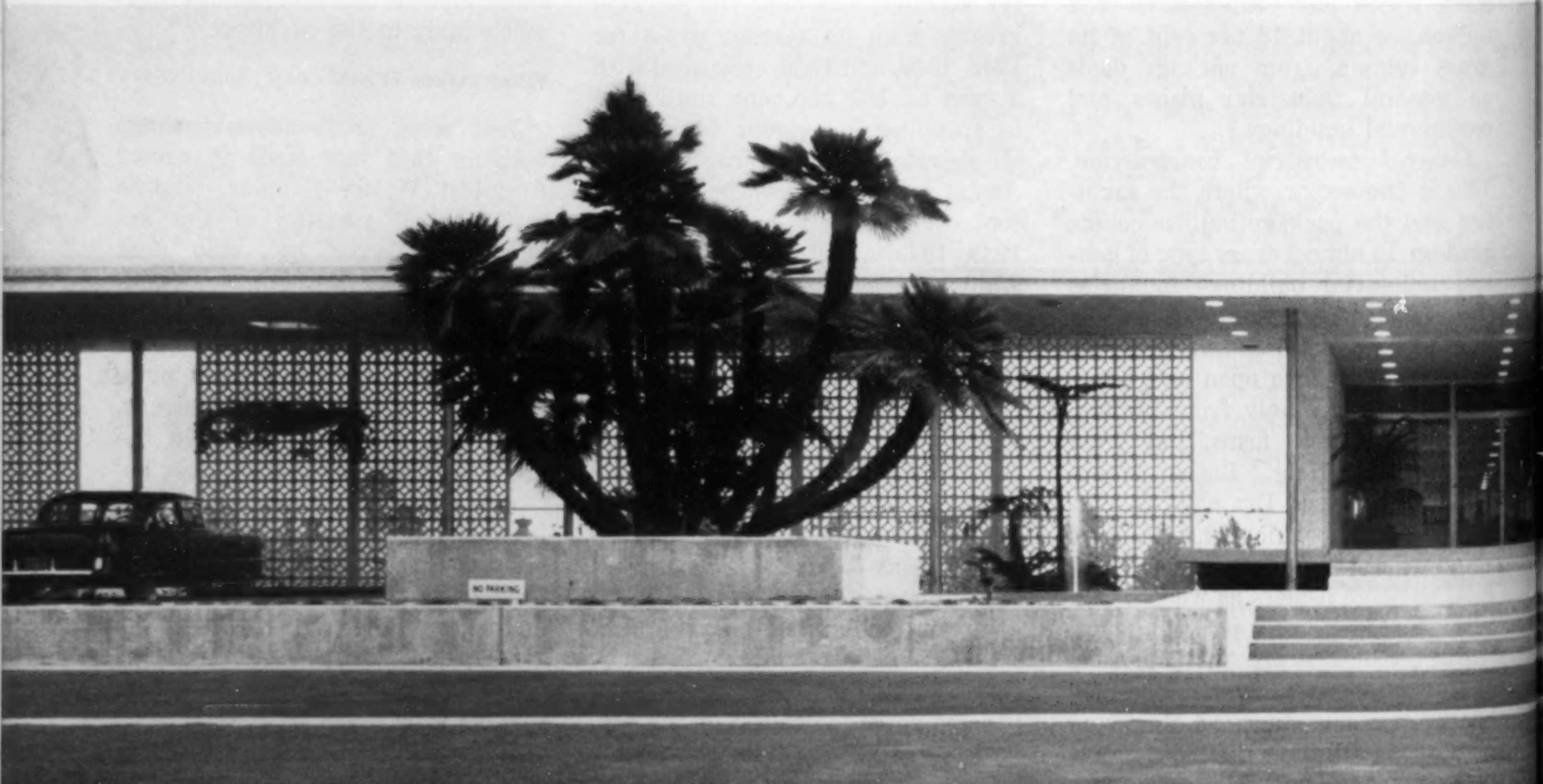


Entry bridges pool between decorated golden columns. Brass-studded concrete grille shields executive balconies.

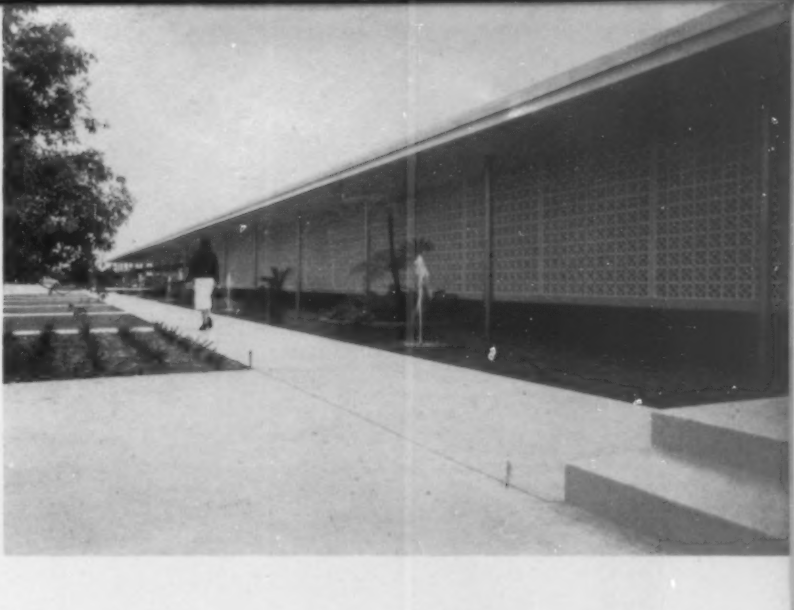
A delicately

Architect Edward Stone has spread the grillwork that is becoming his trademark across the front of a striking pharmaceutical plant in California.

Veiled facade is set behind formal fountains and a palm cluster. Carport grille (left) screens plant's recreation area.



STUART CO. PLANT AND OFFICE BUILDING, Pasadena, Calif.
ARCHITECT: Edward D. Stone
LANDSCAPE ARCHITECT: Thomas D. Church & Associates
INTERIOR DESIGNER: Maurice Sands
ENGINEERS: Hall, Pregnoff & Matheu (structural),
Stockly & Bamford (mechanical), C. E. Mauk (electrical)
CONTRACTORS: Myers Bros.; Brummet & Demblon, Inc.

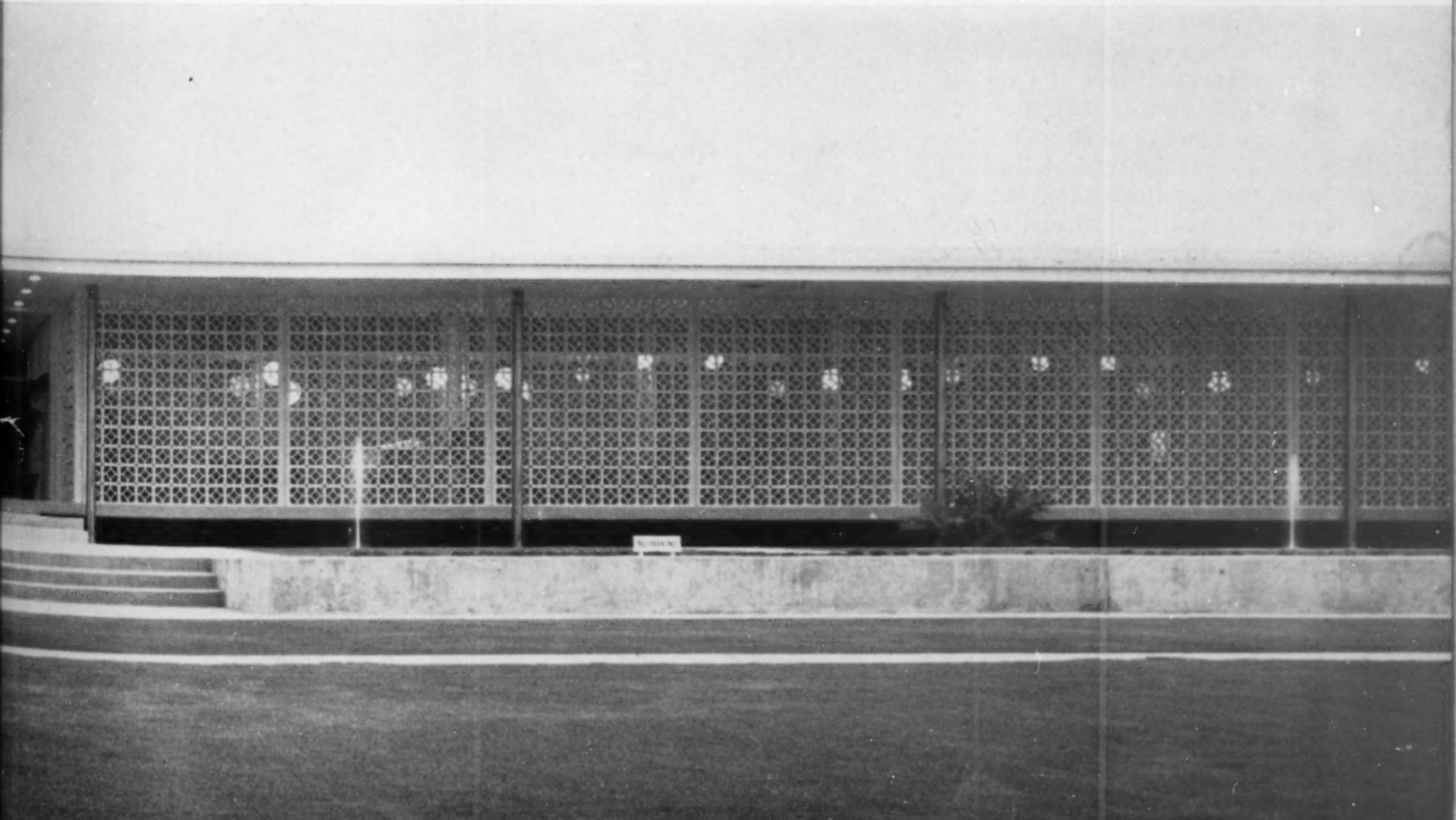


screened factory

The building spread out in temple-like splendor below is not the first design-conscious factory to be built in sunny southern California, but it is surely one of the most elegantly ornamented factories yet to grace the industrial scene. Set back a dignified 150 feet from Pasadena's bustling East Foothill Boulevard, the new $3 million headquarters for the Stuart Co. (multivitamins, antibiotics) first beguiles the passing motorist with a Persian façade of milk-white concrete screening a full 400 feet long. (This is the same circle-and-square grillwork used by the architect, Edward Stone, to veil his own Manhattan town house and his celebrated U.S. Embassy at New Delhi, India. Variations of this architectural fabric will also appear on the airy U.S. pavilion for the Brussels Fair, and on a startling array of more heavily veiled Stone designs for other buildings.)

In the Stuart plant, the concrete veil is stretched before balconied executive offices which are cantilevered over a long fountain pool dotted with islands of greenery (photo above). To the left of the main entry (photo below) the concrete grille is extended behind the

PHOTOS: MARVIN RAND

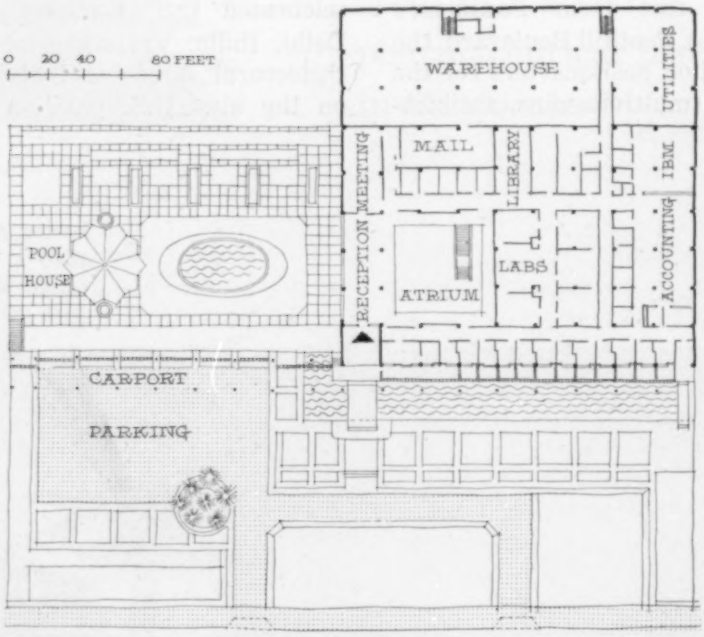


Meeting room opposite entrance is separated from the reception lounge by a rich metal screen and sculpture-planting group.

carport where it screens a swimming pool and shade pavilion for the plant's 140 employees (see plan).

Inside, the one-story building opens surprisingly into a two-story inner atrium, as the land drops away to the rear of the 5.2-acre site. Around the entrance-level gallery are ranged a reception lounge, offices, and laboratories. On the lushly planted lower level, employees dine in their cafeteria-on-the-court, and work in spotless production areas to the rear (photos below and right).

More a laboratory than a simple factory, the plant cost about $1,855,000, or $23 per square foot. This includes the architects' fee, but excludes the cost of land and equipment which totaled about $1 million.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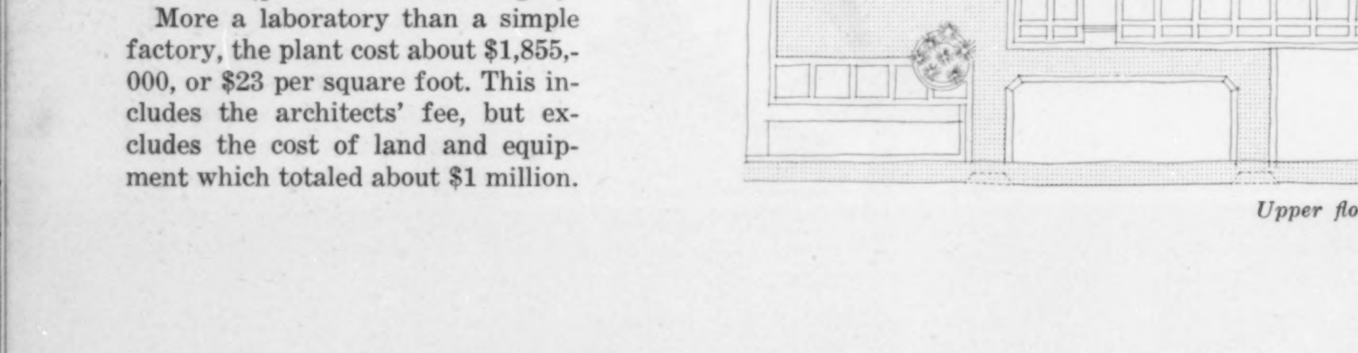
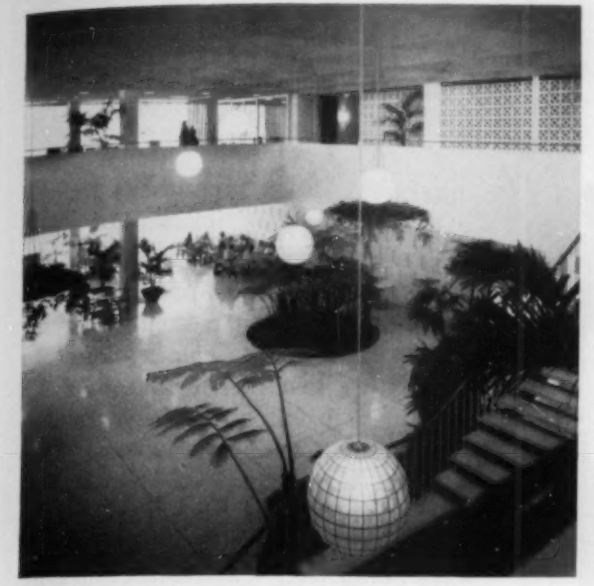
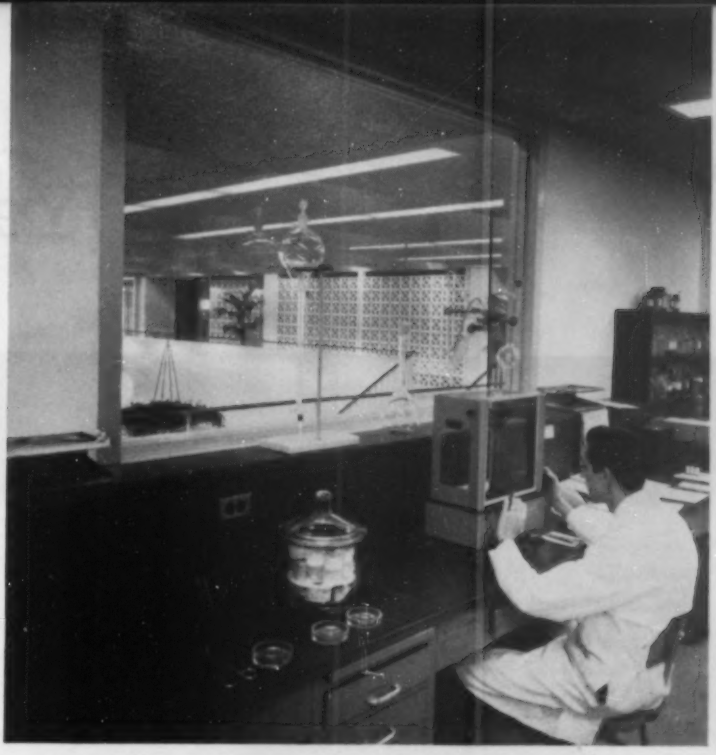
Upper floor plan.

Production areas, including tank room for coating pills (right), are spotlessly bright and fully air conditioned.





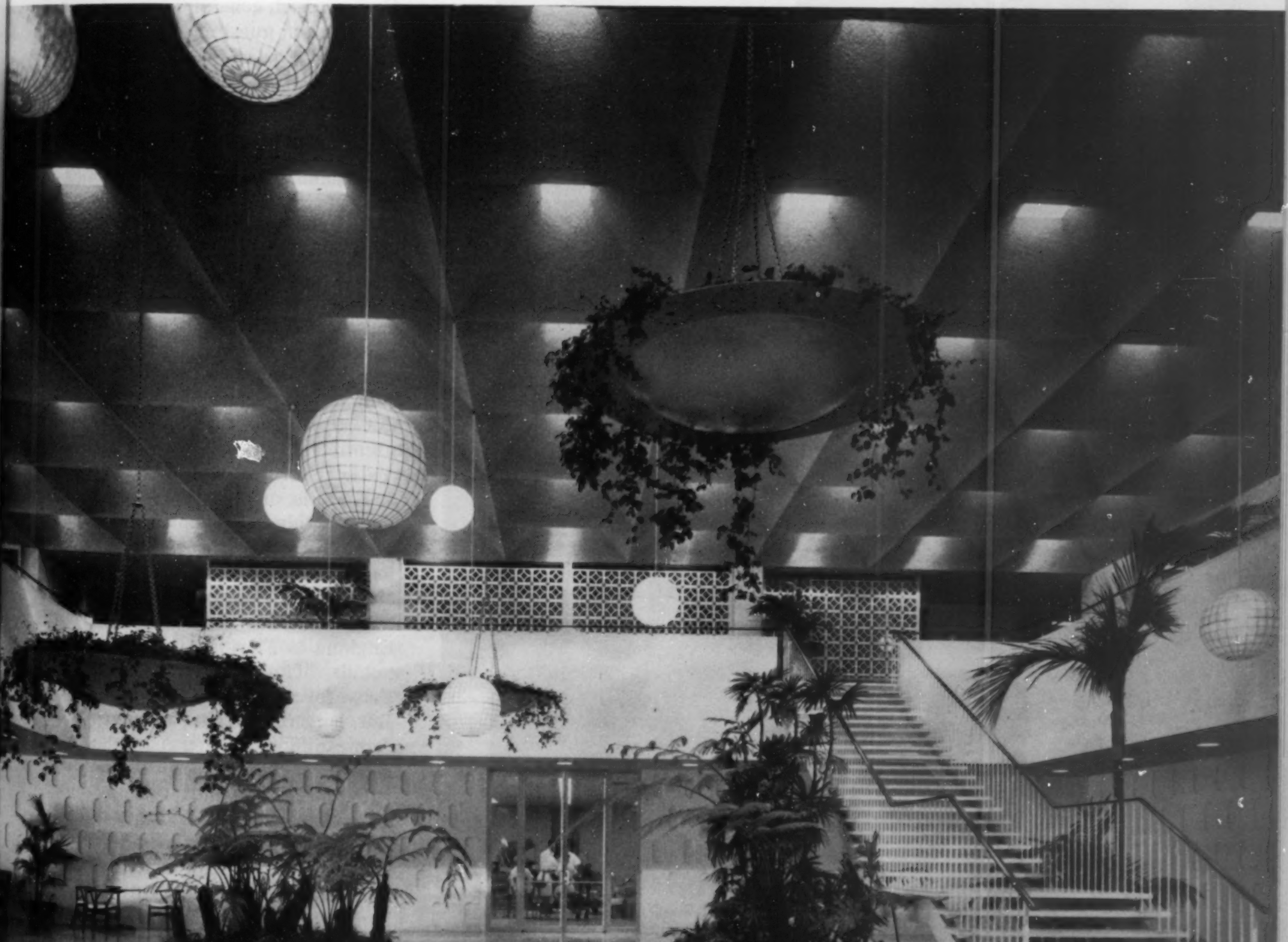


Entrance, lounge, and offices open onto a balcony around a spacious atrium, whose floor is at rear grade level.

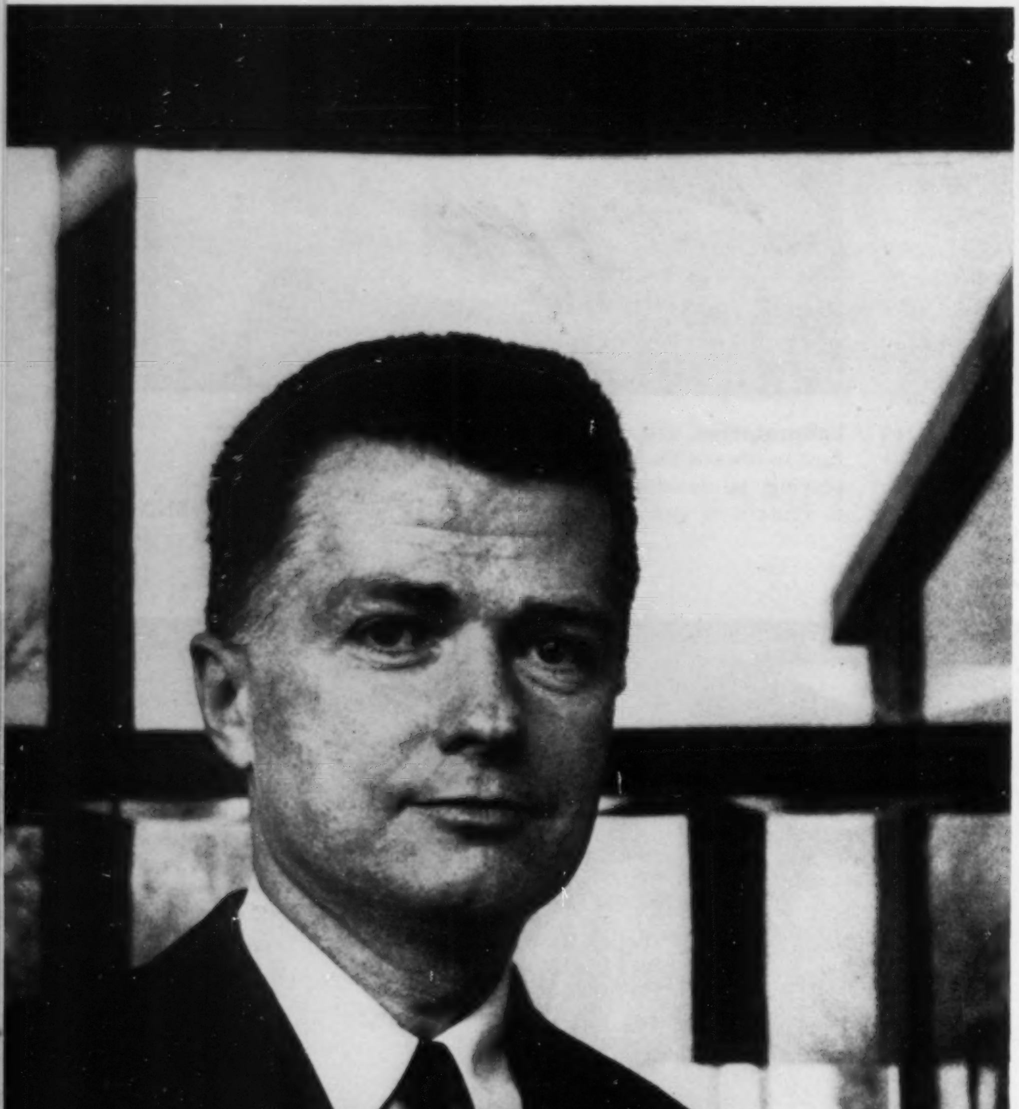
Lush planting and saucer gardens are lighted by pearly globes, plastic skylights. Note capsule motif on walls.

Laboratories and workrooms face in toward the atrium, displaying pill-making processes to visitors on tour.

END



Yale's Paul Rudolph



HERBERT MATTER

BY RUSSELL BOURNE

Teacher, executive, artist, Paul Rudolph, the recently appointed chairman of Yale's department of architecture, probably comes closer to being his generation's ideal of the complete architect than anyone else. Of all the promising postwar graduates of U.S. schools of architecture, Rudolph, now 39, has covered the most ground. Other young architects are doing well, some will eventually achieve similar eminence, but Rudolph got there first.

Specifically, he has the highest batting average for published work of any of the younger architects (in the neighborhood of 90 per cent). He is in such constant demand as a lecturer and guest critic that he has decided to retire for a while. His position as an intellectual leader is already well established—it is firm enough for him to be able to afford some highly unfashionable opinions ("we should reassess our condemnation of the 1893 Chicago World's Fair: at least the Beaux Arts people knew how to make buildings read as a group"). He has advanced from economic peril to relative security. Last year the Rudolph office handled nearly $2.5 million worth of business. The big jobs are coming in, commissions from clients who cannot afford to gamble on untried architects. By these wholly pragmatic criteria, Rudolph has arrived.

There is, of course, the possibility that all this has happened too fast, that either the executive or the intellectual will oversophisticate the artist. His new job at Yale, the external demands of clients from New England to Florida, the internal demands of a maturing talent, all these forces are pushing him hard. But, beneath a rather standard academic diffidence, there is an eager resilience. It is a quality that has withstood a good deal of pushing and seems ready to take a lot more.

Rudolph did a lot of moving before settling at Yale. His father was a Methodist minister in Kentucky; his home was ruled with the strictness of a southern parsonage. He went

"Architecture is a process of finding out what you need to know"

through Alabama Polytechnic Institute (Bachelor of Architecture, 1940), which, as he recalls, "offered good architectural education only when it left students alone. It doesn't matter really where you go to school. It's just a process of finding out what you need to know."

Before and after wartime service in the Navy he spent two years at Harvard's Graduate School of Design under Walter Gropius. "Gropius' greatest contribution," says Rudolph, "was to introduce you to the International Style of the twenties and thirties and then to release you." After a period of travel in Europe on a Harvard fellowship, Rudolph joined Florida Architect Ralph Twitchell as a partner in his Sarasota practice.

He stayed for four busy years and some 40 tautly engineered, tightly budgeted houses. "Gropius may be wrong in believing that architecture is a cooperative art," Rudolph reflects, "architects were never meant to design together. It's either your work or it's his." Nevertheless, the Florida years allowed him to get underway, to progress from the brilliant student to the promising, practicing architect. The success of the houses put Rudolph on the pages of the international architectural press, put him on the widely scattered podia of the architectural lecture circuit—and put such strains on his partnership that, in 1951, it finally shattered.

For the next four years he was very much on his own, leading the precarious, barely afloat existence of the young, success-seeking architect—judging competitions, attending award dinners, avoiding being labeled a "regionalist" or "structure man," meeting the profession's great and near great, gaining public attention by the expert handling of many small commissions (e.g., the Walker guest house, photo right)—all while trying to develop an integral philosophy, and to make a little money. He made both money and friends, but neither his temperament nor his schedule allowed much relaxation. Rudolph remains a bachelor today.

Professional stability, however, came in 1955. Wellesley College needed a new arts center and hoped to be able to do the right thing by modern architecture without doing violence to the pseudo-Gothic design of most of the existing buildings. Rudolph, who was one of four architects interviewed for the job, possessed certain persuasive qualities. He had a history of derisive statements regarding "today's structural exhibitionists" and was known for his contempt for modern architecture's inability to "make buildings read as a group"; yet he was consistently and generously mentioned by architecture's great names (Mies, Saarinen, Gropius) as a young man of fresh and vigorous talent. He got the job. Then painstakingly, personally, he prepared a series of drawings to depict a strikingly complex building that was at the same time harmonious to Wellesley and important for modern architecture.

Shortly before the Wellesley break he had been asked by the State Department to submit plans for the U.S. Embassy at Amman, Jordan. Of these two projects (pictured below), only the first is being built, the second having been indefinitely postponed because of the political uncertainties of the Middle East. Yet together they comprise the weightiest part of Rudolph's design reputation.

Managing this reputation is a job of no small scale. It is undertaken partly by Rudolph himself, whose concepts of management are fairly basic ("the trick is to know what is important and what isn't"), partly by eight highly competent employees. Four of them are in Cambridge, he is berthed in New Haven, and the rest are in Florida (supervised by Bert Brosmith, a former Rudolph student).

It is a small organization, but it is beset with big worries. A unique problem is the tricky matter of attracting clients in a profession that is supposed to be promotion-free. Bringing adherents to the point of commissions must be subtle, personalized. Rudolph figures that just as he must be the one architect of the firm (although three of his associates are registered), so must he handle most of the public relations. Assessing his abilities in this area, he concludes: " One has energy and one can put reasons into words."

continued on page 192

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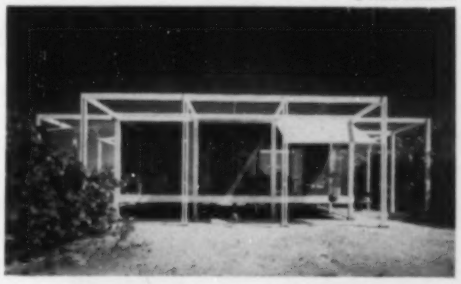
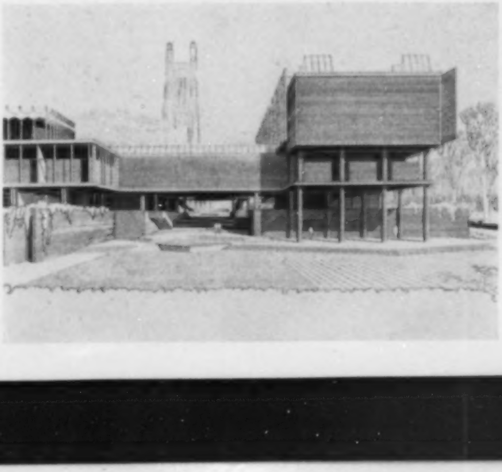
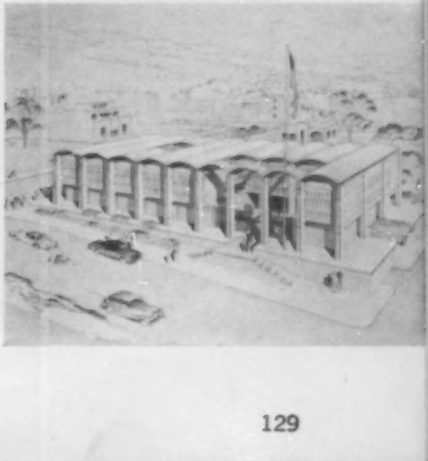


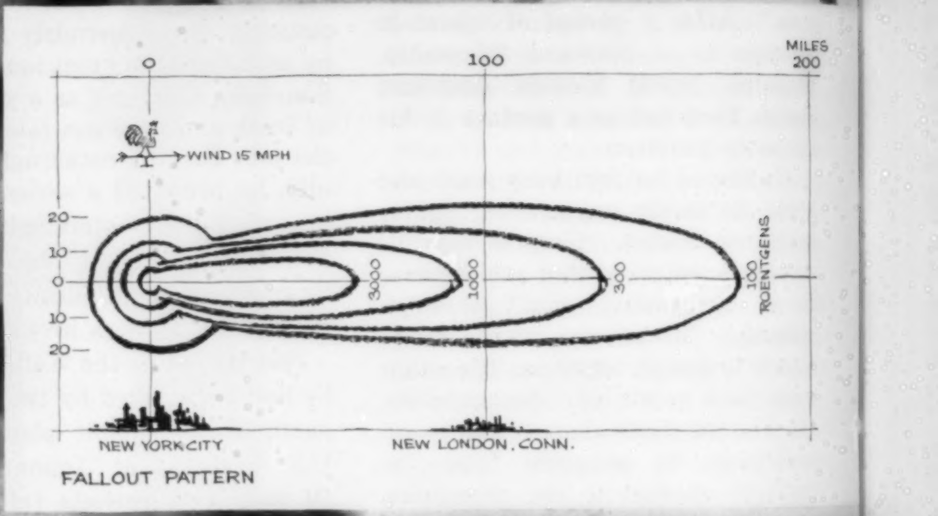
Walker house, Sanibel Island, Florida.

Arts Center, Wellesley College.



U.S. Embassy, Amman, Jordan.

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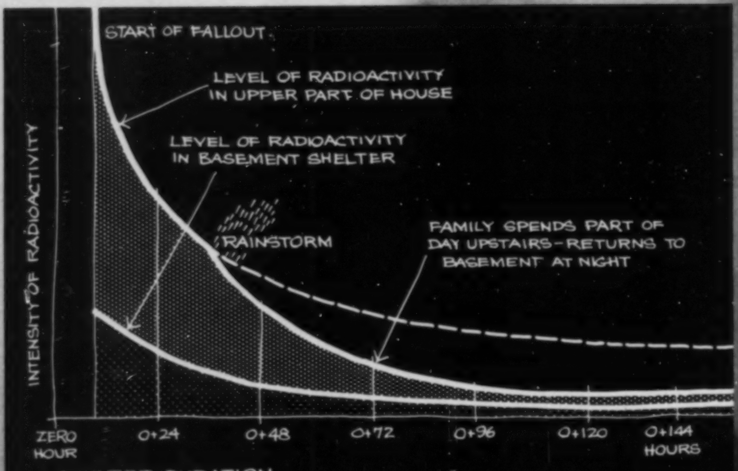
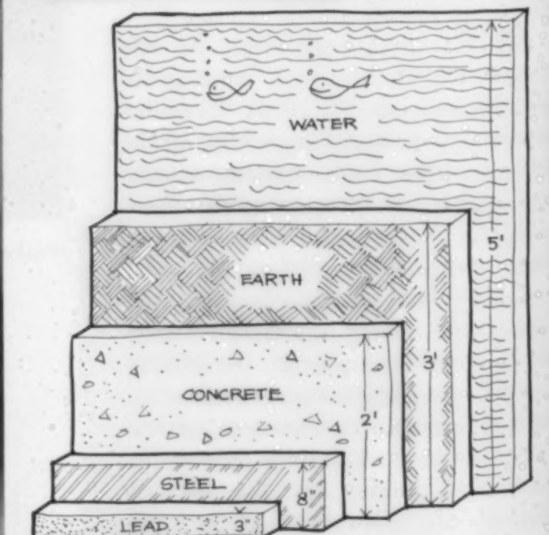
FALLOUT PATTERN



SHELTER DURATION


WATER
5'
EARTH
3'
CONCRETE
2'
STEEL
8"
LEAD
3"

SHIELDING MATERIALS

Atomic radiation is a new building design element to be taken into account with wind, weather, and sanitation. An examination of problems and proposals.

Fallout shelters

Both the Gaither and Rockefeller reports, those grim assessments of the nation's defense posture, strongly recommend that the federal government undertake a broad-scale fallout shelter program. The Gaither Report is rumored to favor a program of upward of $20 billion over the next few years. The Rockefeller Report, while offering no budget estimates, makes clear why fallout shelters, protecting simply against residual atomic bomb radiation, are favored over blastproof shelters.

"It has been estimated," says this report, "that half of the casualties of a large-scale atomic attack, or between 25 to 35 million, might result from radioactive fallout. A fallout shelter program could prevent such a calamity by reducing casualties substantially. . . . Fallout shelters are more feasible than blast shelters because they are easier to construct and because the population does not need to enter them until *after* an enemy attack has in fact occurred." What this means is that there would be sufficient warning time to save many people from radioactive fallout to the windward of an atomic explosion, whereas, with atomic warheads joined to 18,000-mile-per-hour missiles, there would be little or no warning time in the immediate target area to allow people to gain shelter. Hence, blast shelters for large cities are written off by many experts today as being both prohibitively expensive and largely futile.

Behind the sudden push for a big fallout shelter program is a substantial agitation for months and even years by leading scientists, engineers, and technical agencies. One of the earlier advocates of a shelter program, one even larger than any now contemplated, was Dr. Edward Teller, father of the H-bomb. The latest is Dr. Willard F. Libby, Atomic Energy Commissioner, who in a recent interview stated: "You could reduce casualties by 50 per cent if you mounted a fallout shelter program. . . . We are just plain insane not to do something about it now."

The muddled present

Insane may be the term for it, but nothing since World War II has been so apathetically viewed or so badly mishandled as the Federal Civil Defense Administration. Until recently, this agency was headed by amiable Val Peterson, whose two major policies were air-raid drills, viewed with massive indifference, and plans to evacuate large cities, scoffed at by all traffic experts as liable to cause nearly as many casualties as the atom bomb. His last act early in 1957 was to recommend to Congress a $34 billion blast and fallout shelter program, which sank without trace, along with requests for adequate administrative funds, cut to $40 million for this year. Since the middle of 1957 the FCDA has had a new administrator in Leo A. Hoegh, ex-governor of Iowa, who has tried for a more realistic program and promoted research on fallout shelters. But the whole shelter proposal is again being re-examined by the National Security Council and other administrative agencies, which may mean it is as far off as ever. Senate committee hearings may put more heat on the subject.

A good part of the apathy is engendered by the plain confusion of the experts. Teller, for instance, wants large blast as well as fallout shelters deep underground in cities (while

BASIC FACTS of fallout begin with cigar-shaped fallout pattern (opposite) showing contoured intensity levels measured in roentgens, and distances of fallout radiation, 18 hours after explosion at ground zero. Shelter materials to cut off this radiation to 1/5,000th of outside intensity are displayed in chart showing relative thickness of various materials required, or their equivalents. Shelter duration chart shows relative decline of fallout radiation with time, and period when a family must stay in basement shelter to lessen dose received. Here rain on second day helps decontaminate roof, which householder can complete by taking an hour or so out later to hose down thoroughly.

BOB LANDRY—LIFE

pooh-poohing the effects of fallout from nuclear tests, against some 9,000 other experts who want such tests halted). Others advocate smaller, lighter fallout shelters, because, they argue, many people would not be able to get to large community shelters in time. Still others argue that the building of some blast resistance into shelters should not be entirely abandoned. They point out that a bomb dropped on any part of the country would be a warning for nearby and other areas to seek shelter, hence there would be a warning system of a sort.

Meanwhile, some expert or other can always be counted on to pop up with a really wild idea. The latest is Navy Commander George F. Bond, medical researcher at the New London Submarine Base, who solemnly proposes that underwater cities be built 150 feet down under the continental shelves off the coasts, equipped to support life indefinitely on algae, oxygen, and hydrogen from sea water.

The American temperament, at once optimistic and fatalistic, and not directly touched by bombing for a century, has not taken any of this discussion very seriously. Yet fallout radiation is a very real danger; it is a danger which, given some forethought, study, and money, can definitely be abated; and a sensible fallout shelter program seems only the better part of prudence. Britain and Germany saved many thousands of lives in their bomb shelters during the war. The first requisite is an honest, open, fact-filled educational program, which the American people have not had up to now. The second is a thorough operations research study of shelter standards, city and all building resources, and alternative solutions. And third is involvement on a high professional and school level of architects and engineers, who, charged with the integrity and worthiness of buildings, must now take into account a new design element—atomic radiation and fallout—growing with every atomic explosion and certain to become as permanent an element in building design as wind, weather, and sanitation.

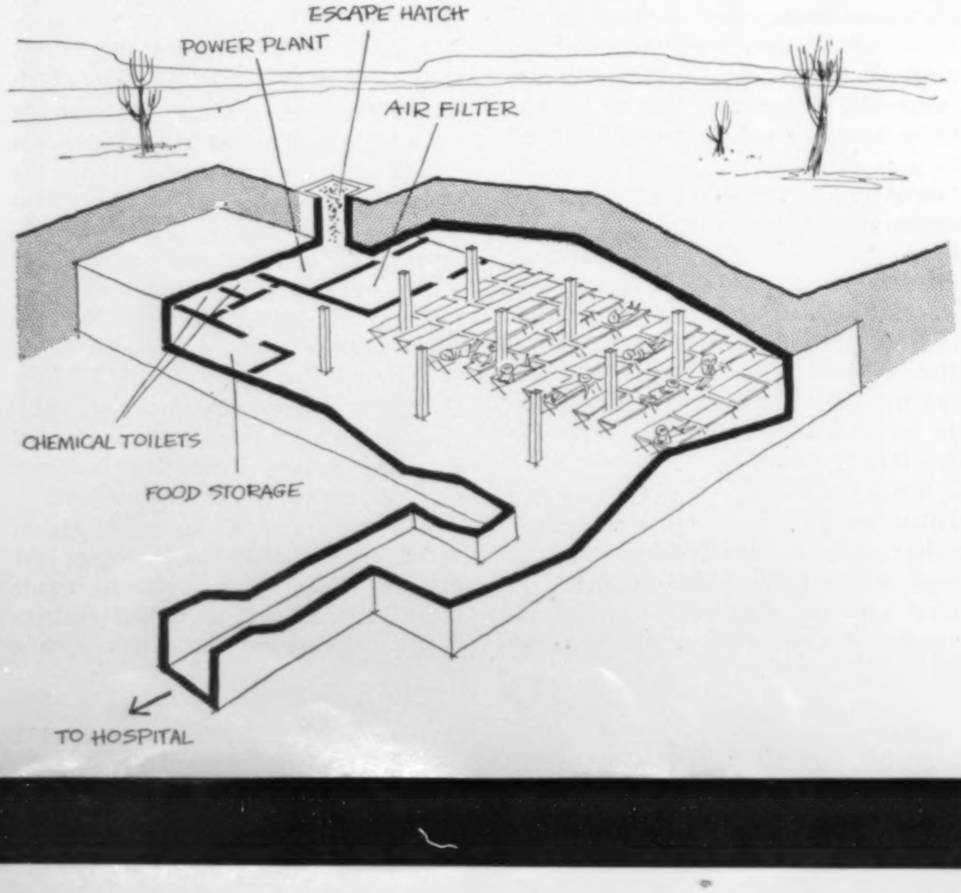
Radiation facts of life

The first official apprisal the American people had of the long-range dangers of atomic fallout was in an AEC release of February 15, 1955. This reported the results of fallout on the hapless crew of a Japanese fishing boat, *Lucky Dragon*, 80 miles from an atomic test at Bikini Atoll which had happened nearly a year before.

This fallout, which also seared and raised blisters on some of 110 natives and U.S. servicemen on nearby Marshall Islands, demonstrated beyond doubt that delayed radiation from a nuclear explosion, carried by winds, could dangerously cover many hundreds of square miles from the target area. In this Bikini test, fallout extended for about 7,000 square miles downwind in a cigar-shaped formation (see page 130), an area ample enough to cover the whole heavily populated strip from Washington to New York. At 160 miles, radiation was strong enough for days to have seriously threatened the lives of about half of any people in the area who remained outdoors and did not take protective shelter.

Fallout does not fall as the gentle rain from heaven but as a fine dust, often visible in the air. The unlucky Japanese fishermen saw it as a blanched ash, "like rice powder." It may also be darker in color or mistlike, or not readily visible in rain or snow. It is formed initially from the vaporized casing and nuclear material of the bomb itself. In the sequence of a 20-megaton explosion (equal to 20 million tons of TNT), the enormous fireball with its familiar mushroom cloud instantly devastates everything within a 5-mile-radius area, then wreaks heavy to moderate damage out to 15 miles by a combination of flash burning, fire, blast wave, and prompt radiation (lethal neutron radiation from the explosion itself). "In terms of a direct hit," says Dr. Libby, "the large cities are gone."

These nuclear forces create a wide range of radioactive elements out of the bomb and surrounding matter, sucked up as fine particles into the cloud and dispersed by the wind. De-



HOSPITAL SHELTER, designed for the new West Allis Memorial Hospital in Milwaukee by local Architects-Engineers Darby, Bogner & Associates, is one of the first private shelters to be constructed. Its underground, 24"-thick concrete wall and roof slab construction, estimated to cost $70,000 complete, goes well beyond fallout requirements to include blast resistance that may give chance of survival close to ground zero. Including such facilities as food and water storage, an independent power plant, filtered heating and ventilating system, and standby medical equipment, it is a good example of a well-conceived small shelter. It is designed to hold between 140 and 200 persons—about 120 litter cases and 20 staff members—for several days. Civilian shelters need not be quite so elaborate.

pending on the size and height of the burst and state of the wind, the radioactive pall spreads (not necessarily in a set pattern) and begins falling from one to 12 hours after the burst. This is the margin for taking shelter.

Alpha, beta, gamma

Air bursts create a lighter, slower-settling fallout than surface bursts, which fuse and suck up elements from the earth into microscopically heavy, tortured particles on which more radiation rides farther and settles more swiftly and lethally to earth. The duration of the danger is governed by the rate at which radioactive elements decay. For the elements in the range of serious fallout, the average strength decreases tenfold for every sevenfold increase in time. Hence the critical period is the first hours and days after fallout begins, with ten days to two weeks being the estimated time for full shelter protection for complete safety.

Fallout, therefore, is neither mysterious nor wholly invisible, but a measurable physical fact. And its lethal potentialities are no joke. Three types of radiation are given off—alpha, beta, and gamma—of which the latter is the most penetrating and fatal. The first two, unless taken in through nose or mouth, produce only festering burns and blisters on the skin. But gamma rays, stronger than X-rays, penetrate all materials including body tissue, destroying cell structures and their ability to repair themselves. The onset of radiation sickness is uneasiness, nausea, diarrhea, skin burns, loss of hair, blood spots under skin, and tendency to bleed easily, followed, if the *whole body* dose of radiation was heavy enough, by sure death within a few days to a month.

Exact mortality prospects on fallout are difficult to arrive at, for in addition to all the variables of atomic explosions, wind and weather, there are wide variables in individual men and in percentage of body area exposed. Even if only a part of the body, such as the legs, is shielded from radiation, it is sufficient to help repair damaged tissue and aid recovery. All 23 Japanese fishermen recovered, save one who died of other causes—even though some in their ignorance filled bottles with the white ash to take back to Tokyo as souvenirs—largely because most of the particles around them fell into the sea and sank. Mortality prospects can be expressed only in probabilities measured against the amounts or roentgens of whole-body radiation received. These are grim enough. About 50 roentgens produce no visible damage, while 800 would be fatal to most recipients, with 450 roentgens about the median lethal dose. Nearly all of a fallout area for some period would be well beyond the latter level.

The authority on this and other aspects of fallout is *The Effects of Nuclear Weapons*, compiled for the AEC by Dr. Samuel Glasstone and published last year by the U.S. Government Printing Office. Sufficient is known to dissuade anyone who would rubberneck outdoors or collect fallout in a jar after an atomic explosion. No radiations of any amount in any known circumstance are directly beneficial to normal human tissue. Quite the contrary. The less, therefore, the better.

Materials for shelter

The sensible action for anyone is to get the most possible mass between himself and fallout radiation, and stay put until danger is past. This is the rationale of any shelter program. The densest material is lead, but, though lead once formed the roofs on many ancient buildings, it is not a convenient or feasible construction material today. To get the effect of three inches of lead, which reduces gamma radiation to a harmless 1/5,000th of outside intensity, shelter materials may be translated (see diagram, page 130) to: 8 inches of steel, 2 feet of concrete, 3 feet of earth, 5 feet of water, or their equivalent. This is the mass required to reduce fallout radiation to negligible proportions. Something less than this may be adequate, but this is the standard currently being considered for full-scale fallout shelters. It is equivalent in mass to 300 pounds per square foot. Blast shelters would require more than double this mass weight in a different type of construction, which partly explains their high costs. The cheapest of these, the AEC has shown, is a light prefabricated steel frame structure buried under 5 feet of earth.

All this would seem to go against modern architectural lightness and form, but actually such weight is not unknown in parts of modern construction. By trading on equivalences in materials, parts of many existing buildings are close to fallout shelter specifications. The typical 15-to-20-story office building, for instance, is in part a natural fallout shelter. A basement or lower central core area in such a building may be a potential shelter by reason of the upper floors or outer walls and partitions providing the equivalent of 300 pounds per square foot of mass weight. By surveying a building, then beefing up a selected area if necessary, and providing means to make it livable for ten days to two weeks—the most expensive aspect—a life-saving fallout shelter may be attained. In new buildings, architect and engineer could preplan such areas, at little extra cost, and should do so henceforth if they are to guard the owners' and users' interests.

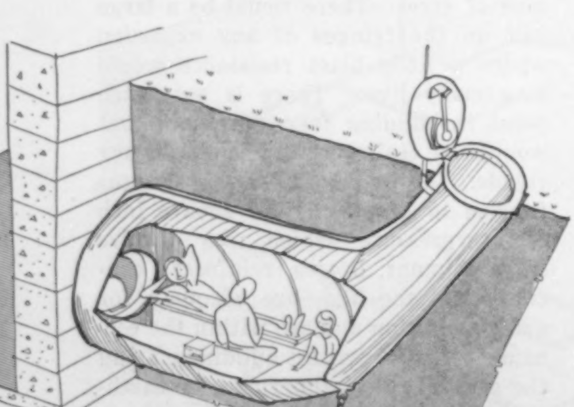
Costs, all experts agree, could be economically spread by designing dual-purpose areas. In a school, for instance, the gymnasium might be put wholly or partly underground, with beefed up floors and ceiling slabs and cheap earth serving as shelter. Or a school cafeteria might be so treated or modified to the same purpose in existing structures. In a factory, a cafeteria could likewise be buried. Or in new office or apartment buildings, underground garage areas might be equipped to double as shelters. One chemical company already has outfitted dual-purpose shelters for its personnel, but, symptomatic of the present state of mind, wants no publicity. Psychologically, dual-purpose areas are good because in an emergency they would put people in familiar surroundings, instead of shoveling them into strange, Martian holes in the ground.

The moot question is how much blast resistance should be built into such shelters. In any attack, targets would be largely unpredictable both as to exact hits on large centers and margins of error. There would be a large belt on the fringes of any explosion where a little blast resistance would save many lives. There is not much point in building fallout shelters that would too easily collapse under heavy rubble. The FCDA thinks that designs for ten to 14 pounds per square inch of overpressure—which may involve extra columns, braces, reinforced concrete, and the like—are adequate for some protection and are within the economic range of present buildings, being the general rule in hurricane or earthquake areas.

Others, however, including the AEC,

think that blast resistance should be raised to 30 to 100 pounds per square inch. What all this would mean in extra costs can only loosely be estimated. Beefing up 10 to 14 pounds per square inch of overpressure would probably add about 10 per cent to basic construction costs for a given building area. Raising a basement area to 100 pounds per square inch might triple present costs for that area. In a new building this might be spread over total costs with little pain; in an old building, it might cause expensive complications.

The touchiest, most controversial of all areas for architectural and engineering discrimination is in the selection of materials, not only for shelters but buildings in general. Many modern materials and constructions are hazardous in this explosive age. Big glass areas, light curtain-wall paneling, even concrete block, would become lethal flying missiles once a blast wave hit. In some Nevada tests, ripped-off sections, stone, and rubble were flying around at a density of 300 missiles per square foot near ground zero. In roofing, there is some dilemma. The best material, from a fallout standpoint, is a smooth one, such as aluminum sheet, because it can be easily washed down to decontaminate it of particles. The worst is a composition or built-up tar and gravel roof, because it is virtually impossible to wash down. A major consideration for architects is to see that a building has good continuity or strong connections between parts. Extra welds and cover plates would help.



FAMILY SHELTER, designed of reinforced plastic by Engineer Willard Bascom, can be buried as a unit, like a septic tank. It has some blast resistance, might be mass produced, Bascom thinks, for $500 or less. Chain is fastened to ground anchor.

The family shelter

Beyond this is still the biggest problem of all, which is how the family at home may survive. Willard Bascom, a knowledgeable engineer who has been a consultant to various official agencies on shelters and tests, and has worked with Teller on shelter ideas, puts the scope of this problem thus: of 168 hours in the week, 25 per cent are spent at work, less than 20 per cent are spent by children at school, and altogether a family spends two-thirds of its time at home. Therefore, to Bascom and others, shelters at place of work solve only a small part of the problem. And the big problem in family fallout shelters is that usually much less than full protection must be settled for—how much less is a matter of debate—because the equivalences of 3 inches of lead would be too expensive for all but the wealthiest households.

Most of what effort FCDA has put in on shelters has been directed to research on finding economic solutions to the family shelter. It is spending $2.5 million this year on fallout shelter research, with a small percentage continuing in research on blast shelters. Mainly, FCDA is concerned with showing how a basement area, an area under a garage or garden house, may be converted to shelter accommodations, using earth and concrete as the cheapest shelter materials. (Bascom has an ingenious family shelter design of reinforced plastic, buried below ground, as a unit like a septic tank, which he thinks could be produced for about $500). FCDA has come around to the idea, however, that a broad-scale educational program is needed before such shelter schemes can be sold.

For, with sufficient basic information, any householder could survey his own premises, calculate his risks, and decide what modifications might be economic for his situation. Not all these need be costly. Sandbags on hand, for instance, to bolster a selected area or to bank against basement windows might afford some protection against fallout. Another improvisation is a big plastic sheet spread on an upper floor, filled with 16 to 18 inches of water, after which a retreat is beat to the floor below. Bathrooms, too, make shelter areas, providing their walls and ceiling are reinforced concrete and there is a strong floor slab. Where expense is unavoidable is in fitting any selected shelter area with the means to make it livable for up to two weeks: packaged food, water and medical supplies; facilities to get rid of waste; a simple generator to provide some light; a battery radio and some instrument, such as a $10 "dosimeter," to measure radiation.

This moves abruptly in on the big question: how much over-all protection for the U.S. is it economically feasible to buy? However cut, any shelter program would be expensive. A family fallout shelter program might well come to $200 to $300 per person, or about half the cost of a second family car for four. For upper-middle-class families in the suburbs this might be a worth-while investment. But most families are not in this class and do not live outside congested areas; they could not afford to build their own shelters, nor would there be enough real estate in congested areas to do so. If the government were to take on such a program, at $300 a head, it might well cost the U.S. up to $50 billion.

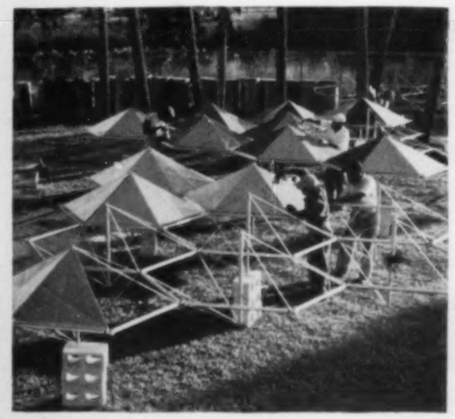
What answer?

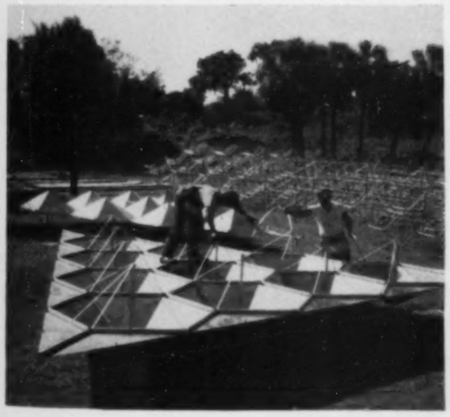
FCD Administrator Leo Hough answers this sturdily: "An effective civil defense is a deterrent to war. The country which survives best will win. We spend $40 billion a year on the military aspects of defense. We should make a one-time investment of one-half of this annual cost on civil defense as a further protection and deterrent." But $20 billion would only be a starter, and many things remain vague and up in the air about such a program. No firm shelter standards have ever been set up and stamped official and final. Much more needs to be known about radiation tolerance, particularly against gamma radiation, not in ideal working conditions, but in a war emergency. Ideas on standards and tolerances have shifted about from year to year, and no national policy or administration support has ever been enunciated on shelters. What has been done is of such a meager size and character that it invites the conclusion that it is only a covering operation to say that "something is being done." The shilly-shallying ought to be stopped. The government should decide whether or not the U.S. is to have a shelter and civil defense program, and, if so, of what real dimensions and purpose. END

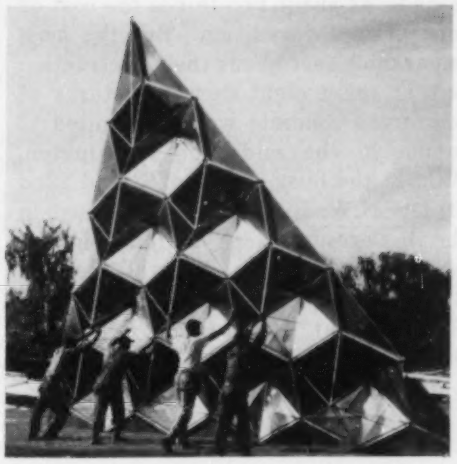
A new way to build a dome

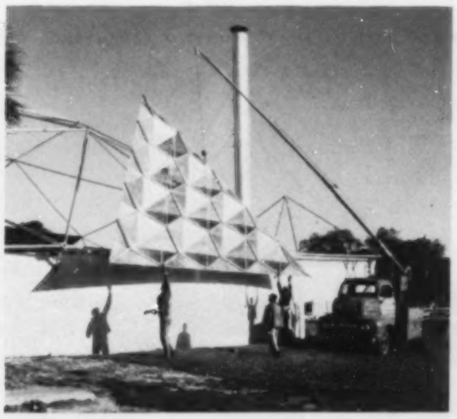
1. Components at the site await assembly.

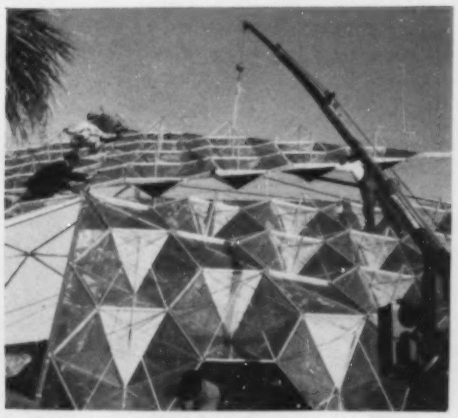
2. Shell trusses are assembled.


3. Aluminum panels are attached.


4. Paneled truss is ready for erection.


5. Truss weighs only 1 pound per sq. ft.


6. Triangle section is easily hoisted.

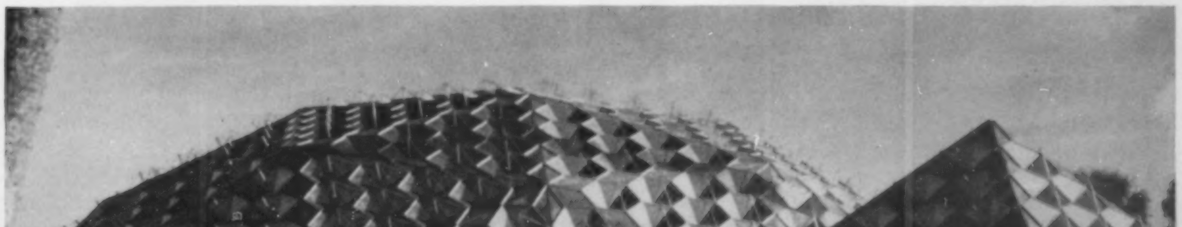

7. Sections hinge on dome's pipe frame.

These "shell truss" space frames, built recently in Sarasota, Florida, represent a second generation of Buckminster Fuller's burgeoning science of geodesics. They are the work of a one-time student of Fuller's, Jeffrey Lindsay, an independent designer-builder of domes.

Lindsay's patented structures are different from the domes being built by Kaiser Aluminum (FORUM, March 1958), although both are rooted in Fuller's principles and both are made of the same metal, aluminum. As the photos show, these frames and panels are erected separately, while Kaiser's dome integrates frame and skin in a single, diamond-shaped building block. These Sarasota structures cap a trickling filter installation at the city's sewage treatment plant. The dome's frame was erected first; it was bolted to 15 telescoping expansion joints which had been affixed to the tank wall. The panels were assembled on the ground, then swung up into place on the pipe frame. A waterproof lining hangs from the dome's interior frame, preventing poisonous and corrosive fumes from penetrating to the atmosphere.

The components for Lindsay's dome were fabricated in Los Angeles and trucked to the Florida site. In shipment, the package occupied only 750 cubic feet of space and weighed 15,300 pounds. Erected, the space frames cover 10,500 square feet. The dome weighs 13,000 pounds, or 1.3 pounds per square foot of enclosed space. Total cost of the structures was $39,500, or $3.76 per square foot of enclosure. (Kaiser's domes weigh 2 to 3 pounds per square foot, and cost about $5.50 per square foot, including foundation.)

This is Lindsay's third shell truss application; the others were demountable domes used for Canadian trade fairs.


8. Cost of dome and pyramid: $39,500.

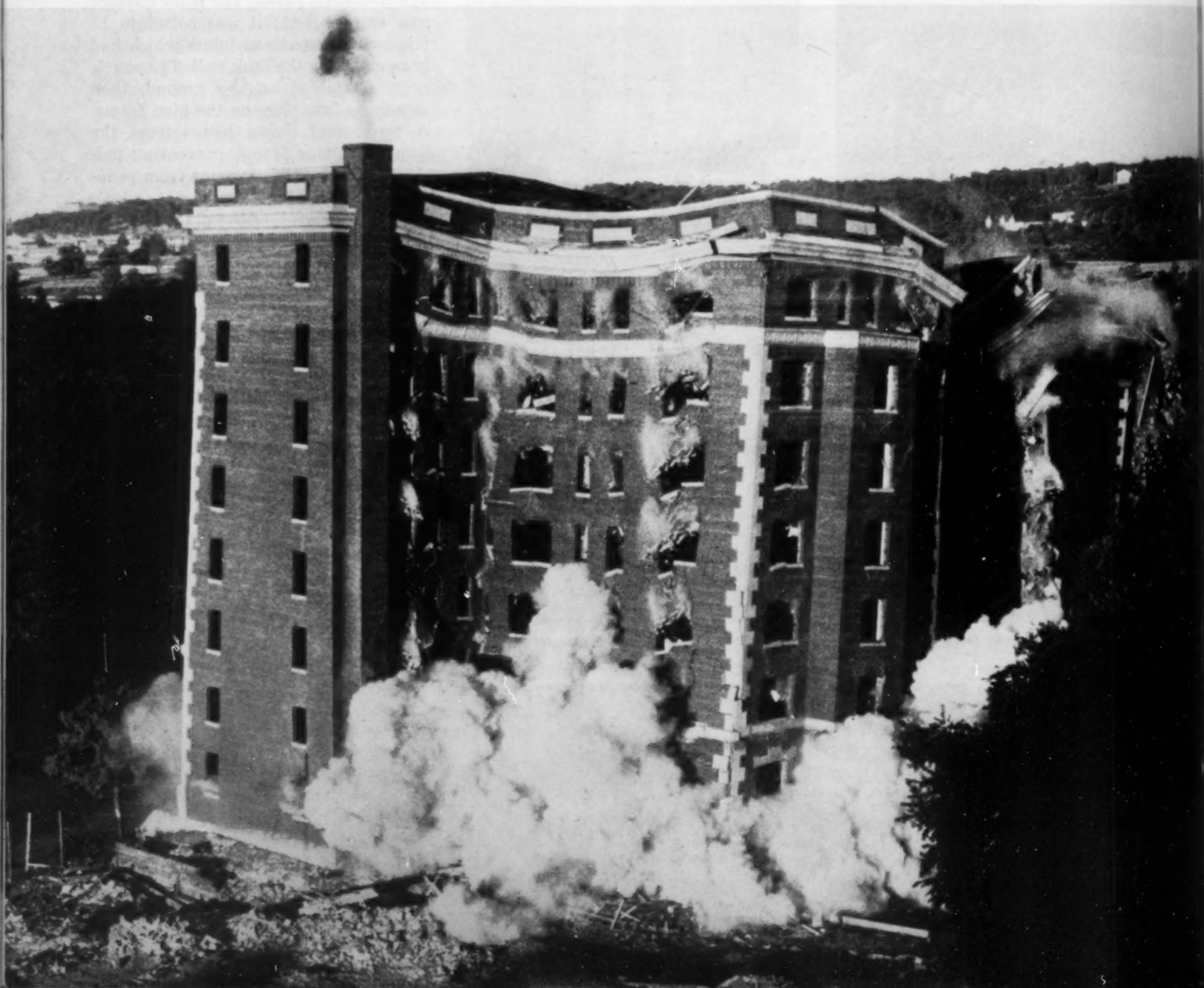
Demolition by dynamite

Each of the two apartment buildings on these pages was demolished in 17 seconds, at about two-thirds the cost of conventional demolition. But the most remarkable fact about their destruction is that these eight-story structures of reinforced concrete were dynamited to rubble in the midst of Washington, D.C., at the busy corner of C and 22nd Streets N.W. Rising out of the dust in the background (see bottom picture, far right), is the Federal Reserve Building, only some 150 feet from the blasts; about 100 feet away is the State Department Office Building, from which these pictures were taken.

Dynamite demolition within city limits is virtually an unpracticed science; most city ordinances prohibit it. Indeed, the Washington apartment buildings would probably not have been dynamited if the demolition contractors had not had support from the General Services Administration, which is now building a $54.7 million State Department annex on the site. Of concern to the city were its water, gas, and steam lines, which passed just 20 feet from the site. The lines were not damaged by the blasts.

The device that makes this technique safe and quite predictable is its wiring system, which links scores of small, strategically placed dynamite charges

1. **IMPACT:** small dynamite charges crumble walls and skeleton of Washington apartment. Some 200 charges were fired within 17 seconds.

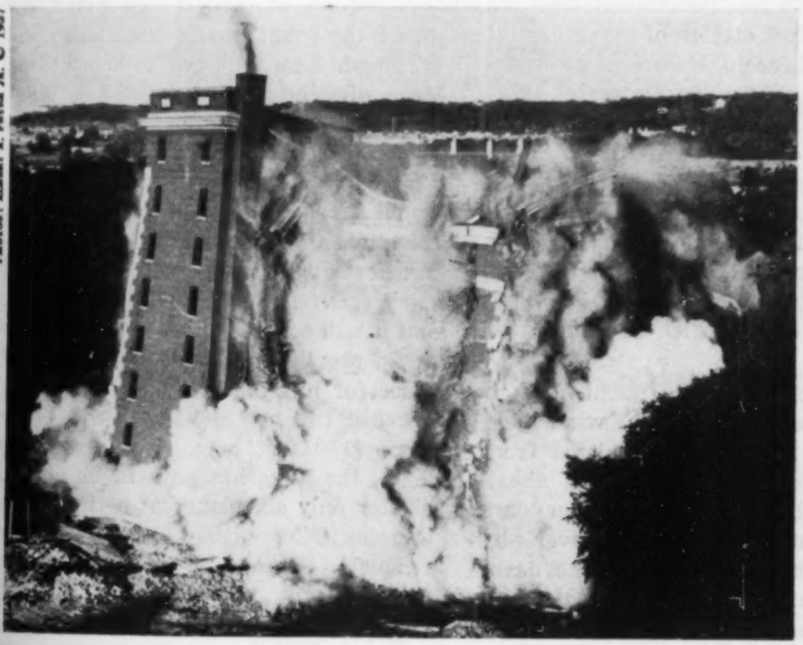


(½ pound each). The firing of each charge is controlled by a millisecond cap, which delays firing for a prescribed fraction of a second. By controlling the firing at each point within the structure—most of the charges were placed in the columns at the basement and first-story levels—each building was made to fall in toward its center, with the walls folding down on top of each other like the collapsing sides of a house of cards. Thus, the dynamite alone is not the working force; the dynamite kicks away the building's underpinnings and the quaking mass plummets downward, knocking to earth everything in its path.

Blasting was done by Burnbrae Drilling & Blasting Co., of Towson, Md., under the prime contractors, A.B.C. Demolition Corp. of Arlington, Va. Jack Loizeaux headed the Burnbrae blasting crew.

Loizeaux measured the blasts' vibrations with a seismograph, and found that vibration was no greater than that created by a heavy truck passing by. Wreckage amounted to 14,000 cubic yards of rubble, including a third building, not shown. The site was cleared in 75 days, 45 days ahead of schedule. The cost of demolition was $95,000, $55,000 under the estimated cost of conventional demolition. END

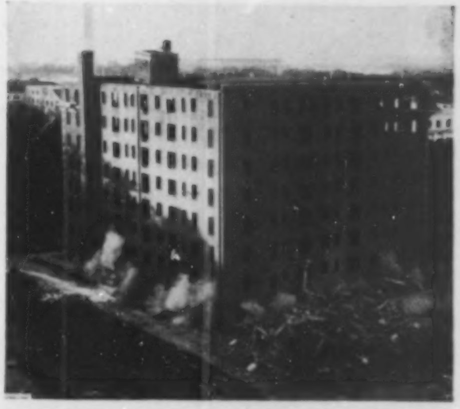
2. COLLAPSE: key to a successful blast is the proper timing of charges.



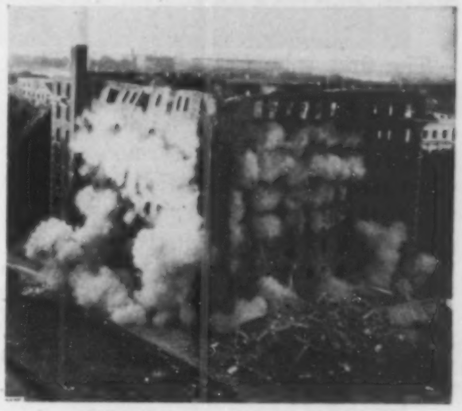
PHOTOS: ALBERT A. FEYER JR. © 1957

3. RUBBLE: force causing collapse is chiefly the building's own weight.

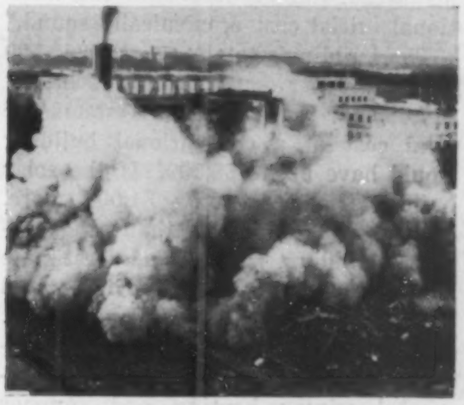
SECOND BUILDING FALLS



1. Dynamite charges were set in building's columns at basement and first floor levels.



2. Its underpinning knocked away, the building folds inward like a stack of cards.

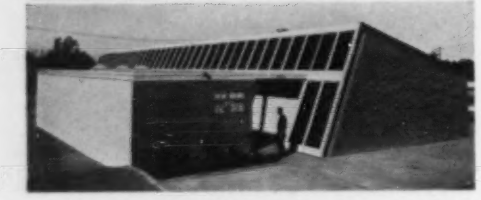


3. Chimney, at left, was not blasted, had to be pulled down by cable and truck.

4. Neighboring Federal Reserve Building, in background, was unaffected by the blasts.

Brief accounts of noteworthy developments

GEORGE KEW—LIFE



SOLAR HEATING TEST

The first solar-heated office building in the world will soon complete its second heating season. How well has its heating system performed? From Consulting Engineers Bridgers & Paxton, designers of the system* and occupants of the 4,300-square-foot building in Albuquerque, New Mexico, come data to indicate that the system's performance has been "successful." Yet, despite a 53 per cent saving in fuel cost, the installation was not a resounding economic triumph: "Based on present fuel prices, a saving of this magnitude would not make the additional initial cost economically sound."

The building's total cost was $58,500 (or $13.60 per square foot), including $17,400 for its mechanical system. The total cost of a conventional building would have been $55,500. If the solar building had cost only $1,000 more, instead of $3,000 more than a conventional building, the designers estimate that the 53 per cent fuel saving would have justified the added capital cost.

The building's mechanical system included an electric heat pump for supplemental winter heating and summer cooling. In mild weather, the heat pump was not needed: the building's temperature was lowered by water which had been cooled by the night air and then stored; in cool weather, sun-warmed water was drawn from the 6,000 gallon storage tank and circulated to the radiant heating panels in each room; this water was also used to warm the building's circulated air.

Heat pump operation during the first heating season cost $78 (due, in part, to "an unusually cloudy January," which necessitated almost continuous operation of the heat pump); the cost of a conventional gas-heating system would have been $169, or $91 more.

In colder New England, meanwhile, scientists and architects at M.I.T have completed work on a solar-heated house, designed to provide between 75 and 80 per cent of its space heating needs from solar energy. Like the Albuquerque building, however, M.I.T.'s house contains a high-cost heating system: some six times as expensive as a conventional system. But both indicate that the cost gap is narrowing; M.I.T. estimates that solar heating will be economical when capital costs drop to within twice the cost of a conventional heating plant.

ELECTRONIC HIGHWAY

On a 300-foot stretch of experimental highway at Lincoln, Nebraska, electronics engineers have demonstrated that it is technically possible to control the steering, speed, and braking of automobiles with automatic control devices. The system, developed by Radio Corporation of America's Dr. V. K. Zworykin and L. E. Flory, requires a series of electronic detector units and a guidance cable, which are buried in the road.

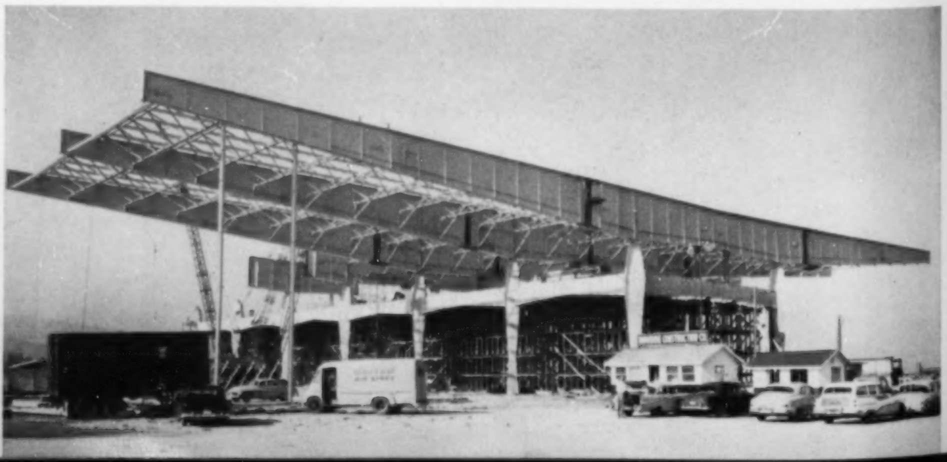
In the Nebraska experiment, drivers operated their cars with the windshield blacked out; signals transmitted from the detector units in the road ahead indicated the presence of other cars ahead, instructed the blind driver—by way of warning signals on the dashboard—what speed to maintain and when to stop. The guidance cable transmitted a second signal to the driver, which was received on a meter on the dashboard, indicating whether the car was deviating to the left or right of the traffic lane. In later experiments, the designers intend to replace both driver and controls with fully automatic equipment. Zworykin says that the next logical step will be the construction of an enlarged test facility (at least 2 miles in length) where the system could be tested "at normal speeds and with completely controlled experimental vehicles."

Following the Nebraska experiment by only a few weeks, General Motors engineers demonstrated that automatic guidance was not so very far in the future. On a one-mile stretch of road, a Chevrolet, equipped with computer and servo system, was steered automatically by a cable buried in the roadbed.

GIANT JET HANGAR

A feature of the jet age which will dwarf the giant planes themselves will be the shelters required to house them. One of the first of these huge hangars (below)—for United Air Lines—has been in construction for the past 12 months at San Franciso's International Airport. Completion is scheduled for next September. It is a double-cantilever structure, spanning 142 feet from each side of its three-story core, and it will cover an area of about three acres, providing 153,000 square feet of space for line maintenance of aircraft. Because the new jet-liners will be so large (150 feet long, wing span: 140 feet), the huge hangar will be able to shelter only six planes at a time: four Douglas DC-8 jetliners and two smaller, piston-engine DC-7s.

In order to eliminate supporting columns in the maintenance area, the architects, Skidmore, Owings & Merrill, specified 365-foot-long plate girders, the largest welded plate girders ever made in the U.S., fabricated by Pacific Iron & Steel. The seven huge girders will rest on pillars at the core, and span over the maintenance rooms. END



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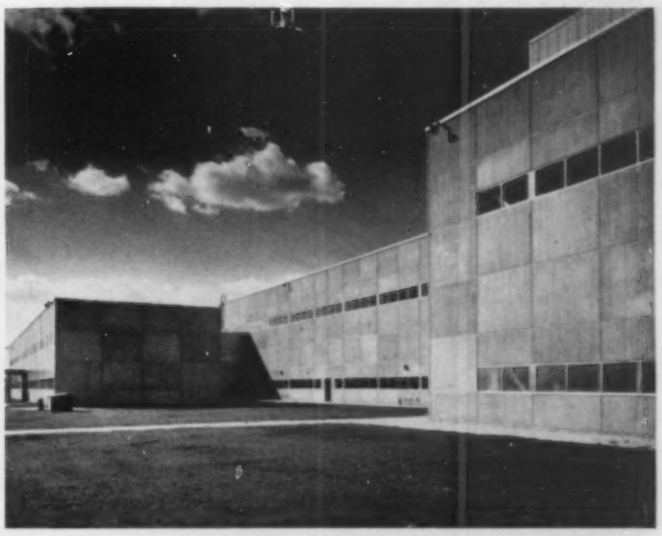
* Architects of the building were Stanley & Wright of Albuquerque.



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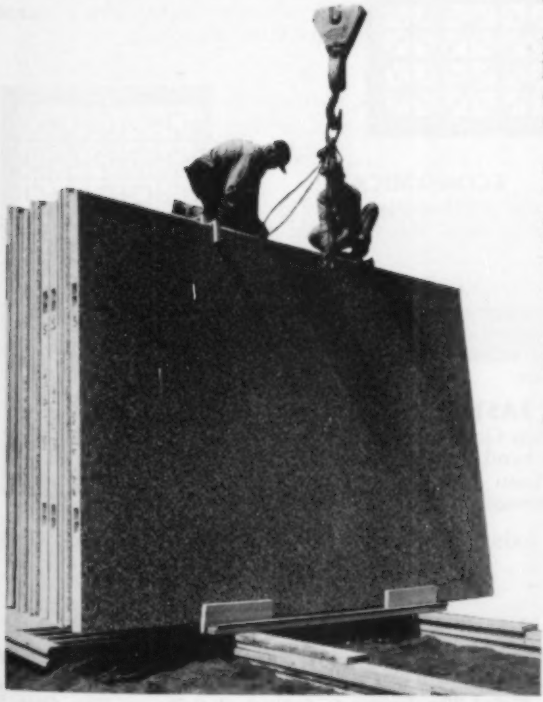

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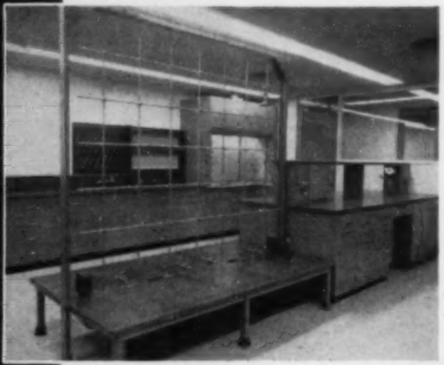

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An article about The Stuart Company, Pasadena, California, is presented in this issue of Architectural Forum.

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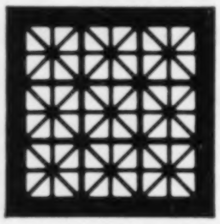
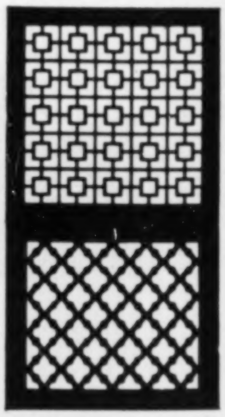


ATTRACTIVE

Hendrick Architectural Grilles combine the functional with the decorative. Many designs are obtainable only from Hendrick.



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Hendrick Grilles cost less to install than most architectural materials.

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Each design can be furnished in a wide range of dimensions, with varying numbers and sizes of perforations.

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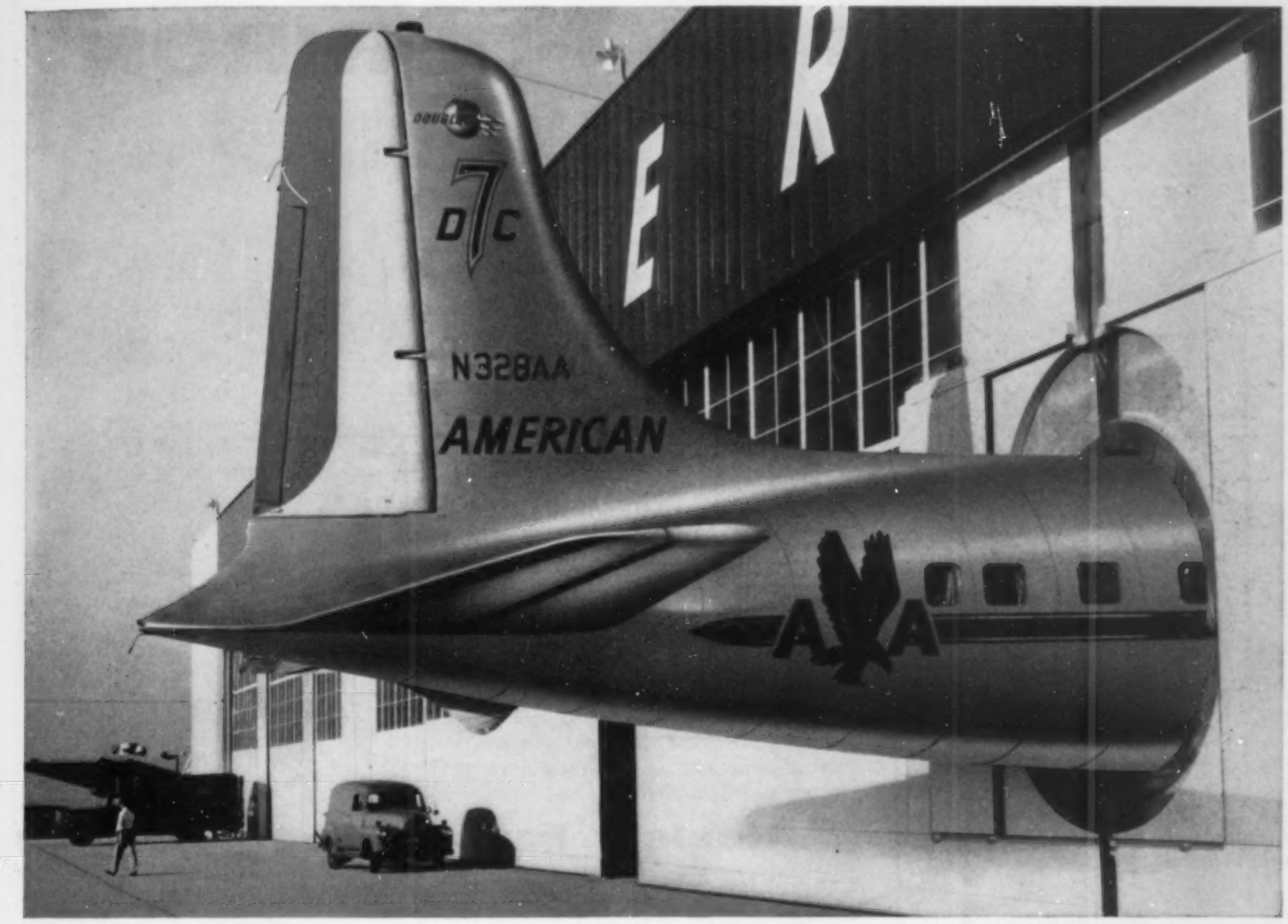
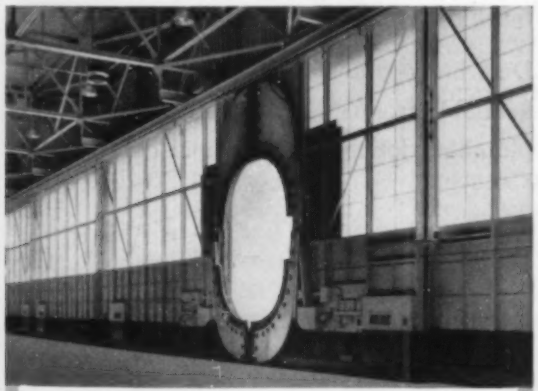


Airplane Hangar Construction Costs Cut 25% to 33% with the BYRNAPERTURE



The Byrnaperture consists of a series of movable segments, operated either by hand or electric power, which fit snugly around fuselages from the Convair to the DC-8, Boeing 707, and other large commercial jet planes of the future.

No longer is it necessary to design hangars which must be large enough to house the entire airplane. With the Byrnaperture, a completely weathertight closure is provided for the nose and wings of the plane permitting mechanics to work in complete comfort inside the hangar.

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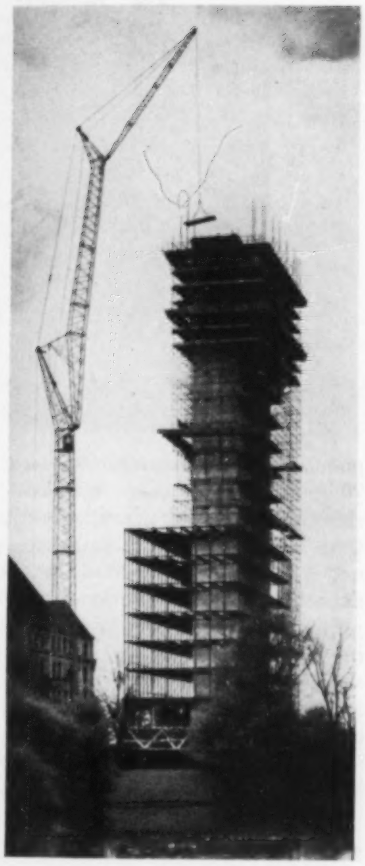
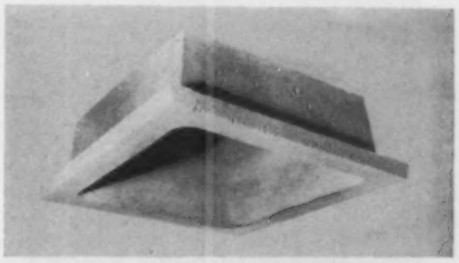


GIANT TOWER CRANE
may cut costs up to 4 per cent

Though widely used throughout Europe for the past two years, the revolutionary Peine tower crane is new to this country. The crane, manufactured in West Germany, is expected to reduce material placement costs on large construction jobs by 20 to 40 per cent. The lofty 333 foot model at left—one of the ten tallest in the world—is now in use at the site of Pittsburgh's new Hilton Hotel, where it is expected to slice six months off the original construction schedule.

Unique in operation as well as design, the Peine tower crane eliminates the need for multiple cranes, as it can handle all materials. It is able to lift, slew, and travel, simultaneously, and can even reach completely across the top of a construction job to work anywhere on the far side. The Peine crane has one 50-horsepower lifting motor and four small (7-horsepower) traveling motors. It is operated by one man, travels about the job on standard-gauge railroad tracks, and is capable of lifting as much as 11½ tons at the remarkable rate of 250 feet per minute. All models slew around full circle at speeds up to 8/10 of a revolution per minute. The manufacturer also claims that further time savings are offered to the contractor when using a Peine crane on successive jobs, for the crane both erects and returns to road position on its own power and can be towed by truck from site to site without dismantling. Cost: about $100,000.

Manufacturer: Universal-Peine, West Germany. U.S. distributor: Universal Manufacturing Corp., Peine, St. Zelienople, Pa.



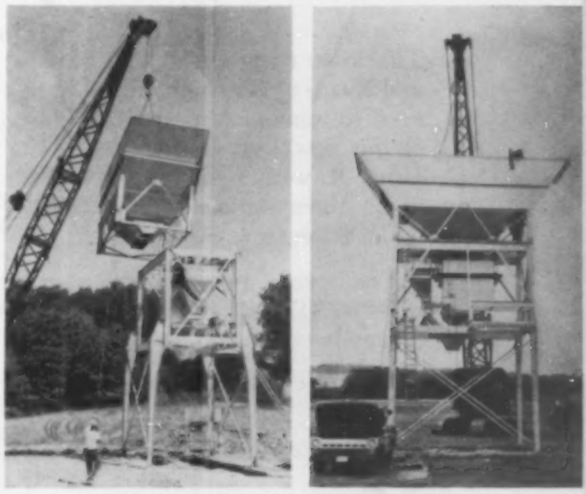
CONCRETE DOMES
are precast to cut ceiling costs

Precast concrete *Acousti-Domes* (pictured above in a lift-slab operation) are 3 feet square and 1 foot high, weigh 126 pounds, and cost $7.20 each. Gray-white, with a slightly pocked surface, they purportedly save both time and labor building waffle slab ceilings. Using the *Acousti-Dome* system, the die-formed domes are simply butted side by side, reinforcing rods are positioned, and the slab is poured. According to the manufacturer the technique offers decided savings: there are no forms to rent, no pans to place or remove, and no grouting or grinding is necessary to achieve a finished appearance. In addition, *Acousti-Dome* ceilings are said to have excellent insulation and acoustical properties. The domes weigh 14 pounds per square foot, cost 80 cents per square foot. Present marketing of the product is limited to an area within a 300-mile radius of the manufacturer's plant.

Manufacturer: U.S. Construction Products Co., 2242 N. 35th St., Milwaukee 8, Wisc.

PORTABLE CONCRETE PLANT
can be set up at job site

These photos show a new ready-mixed concrete plant (*Butler HP-85*) being set up and put to work right at a job site. Semi-automatic, this portable batcher is operated by one man, can be erected or pulled down in a matter of hours, and can produce 200 cubic yards of concrete an hour. Use of the apparatus, according to the manufacturer, reduces the number of truck-mixers required, drastically cuts costly truck-mixer mileage, and speeds up construction time. Cost: about $37,000.



Manufacturer: Butler Bin Co., 945 Blackstone Ave., Waukesha, Wisc.

continued on page 144

Ramset speeds erection of two-story "piggy-back"

Thanks to curtain-wall construction and RAMSET® fastening, there was no need to reinforce the understructure of this new Denver office building. Using RAMSET, two new floors went up in three weeks *without disturbing the tenants in the lower eight floors!*

The speed, quietness and portability of RAMSET helped to make this "piggy-back" operation a success.

RAMSET operators are able to move fast because they have no power lines or bulky equipment to slow them down. One-hand operation makes for faster, safer work. Fasteners and charges are conveniently carried in a pocket. There is no time wasted drilling. Holding power exceeds old-style fastening methods.

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STEEL ROOFING SHEETS are lightweight and easy to handle

The galvanized steel sheets pictured here are being marketed as a lightweight (99 pounds per square foot) roofing material. Fabricated from 28-gauge sheets 18 inches wide and 8 feet long, and stamped to simulate roofing shingles, the panels are nailed to the subroofing and sprayed with a mastic and ceramic granule coating. With the coating the panels weigh about 140 pounds per 100 square feet—or roughly 70 pounds less than standard asphalt shingles. Though priced slightly higher than asphalt shingle roofing, the new product (*Jalzinc*), because of its weight, is expected to cut installation labor costs and permit some reduction in the size of framing members. Cost: about $17.50 per 100 square feet, plus approximately $12 per 100 square feet for the asphaltlike coating.

Manufacturer: McDowell Manufacturing Co., 301 Stanton Ave., Pittsburgh, Pa.

SYNTHETIC SOD assures a uniform, weedless lawn

A tissue-paper-thin green mat peppered with embedded grass seed has recently been introduced by Minnesota Mining and Manufacturing as the easiest way for landscape architects to plant a lawn: this synthetic sod is simply rolled out on prepared soil, and watered down. According to the manufacturer, the mat clings to the ground without being staked, prevents seed from being washed or blown away, and checks soil erosion. Because the seeds are evenly distributed within the mat, a uniform stand of grass is insured and the mat's synthetic fibers (rayon and viscose) let only the single-speared grass shoots through, and block and kill broad-leafed or double-speared weeds. Cost: about 14 cents per square yard, or about four times as much as loose seed, half as much as real sod.

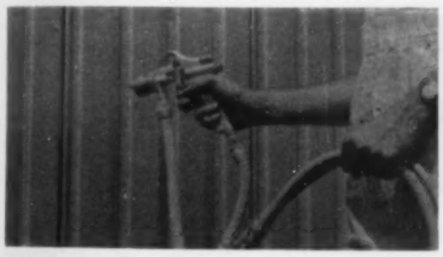
Manufacturer: Minnesota Mining and Manufacturing Co., 900 Bush Ave., St. Paul 6, Minn.

TOUGH PLASTIC SKIN has varied building applications

Videne, a new polyester laminating film developed by Goodyear Tire and Rubber Co., is reported to have an extremely high abrasion resistance and is expected to be widely used as a decorative and protective surface for building products, such as interior and outdoor wall coverings, furniture, and decorative textiles. Chemically, *Videne* is an unoriented, amorphous, thermoplastic material which cannot be crystallized and differs from other plastics in one major respect: only heat and pressure are needed to laminate it to textiles, metals, wood, paper, and certain plastics. No adhesives are necessary to achieve the bond. The manufacturer says that the new film also has the unique feature of intensifying background colors. The plastic will be produced at Goodyear's Akron plant until a new $9 million *Videne* plant gets into production at Apple Grove, West Virginia.

Manufacturer: Goodyear Tire and Rubber Co., 1144 E. Market St., Akron 16, Ohio.

PLASTIC LACQUER COATING protects aluminum against oxidation



A clear butyrate lacquer used during the past three years to protect the aluminum siding on trailer trucks is now being introduced to the building industry. Developed by Eastman Chemical Products, the new lacquer is sprayed on clean aluminum at a cost of about 1 cent per square foot. According to the manufacturer it completely checks any oxidation of the metal surface. Furthermore, it is nonyellowing and will not pit or peel. Price per gallon: $2.85. One gallon of special thinner (cost: $1) is used for every two gallons of lacquer.

Manufacturer: Pyroxylin Products Inc., 4851 S. St. Louis Ave., Chicago 32, Ill.

ALUMINUM-BASE PAINT acts as watertight roofing compound

A colored, asphalt-and-aluminum-base paint trade-named *Luma-tint* is described by the manufacturer as a "new roof in a can." Like paint, *Luma-Tint* can be applied by brush or spray and spreads on like soft butter. But unlike most paints, it acts as a versatile roofing compound. It is said to be elastic and resistant to chemical attack, sun heat, and erosion; and due to its aluminum base, *Luma-Tint* also re-

continued on page 146

applications unlimited!

Margaret R. Read, M.D.
Physician's Suite — waiting room, X-ray room, office and examining rooms.
Architect: John T. Kelly, Cleveland
Equipment by: The Wakefield Company
Using FLAT Soundsheet 3' x 3' squares framed under tension

Tufts University, Bray Mechanical Engineering Lab
Architects: William A. Pollack, NEGEA SERVICE CORP., Cambridge, Mass.
Equipment by: Smithcraft Lighting
Using CORRUGATED Soundsheet on 2 ft. centers.

TWA Reservations Office, Boston.
Architect: Thomas F. McDonough, Boston
Equipment by: Luminous Ceilings, Inc. Office, Boston
Using CORRUGATED Soundsheet in 3 ft. modules

CONTREX

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TRANSLUCENT ACOUSTICAL ELEMENT — ONLY Soundsheet successfully combines acoustical and light diffusing properties! Today's important new architectural tool, Contrex Soundsheet can be used effectively with most wall-to-wall or area lighting systems for remodelling or new construction. Available from coast to coast through the nation's leading manufacturers of lighting and acoustical equipment, Soundsheet can also replace or supplement other acoustical or lighting media now installed.

Because of Soundsheet's unique versatility, many applications are being developed, such as functional sound absorbers, back-lighted wall treatments, duct-lining to reduce sound . . . and space dividers. Also it can be produced to equipment manufacturer's specifications in patterns and COLOR, translucent or opaque.

- *Easy to install*
- *Balanced sound absorption*
- *Softly diffused lighting free of shadows and reflections*
- *Washable*
- *Harmonizes perfectly with any of today's architectural interior concepts*
- *Available in FLAT or CORRUGATED sheets*
- *U.L. listed*

WRITE today for more information about the many advantages — the many applications for Soundsheet and how they can benefit you.

"**SOUNDSHEET . . .** *for new ideas in sound and sight*"

CONTREX

CONTREX COMPANY
Chelsea 50, Mass.

Developed for Contrex by Bolt Beranek and Newman Inc.

MAIL TO:
CONTREX COMPANY
CHELSEA 50, MASS.

☐ Please send me literature and samples of SOUNDSHEET.
☐ Please send me a list of the authorized manufacturers who include Soundsheet in their lighting equipment.
I'm interested in Soundsheet
☐ for use as acoustical ceiling.
☐ for use in new application.

Name ______
Company ______
Address ______
City ______ State ______

AF-4

AVAILABLE FROM COAST TO COAST THROUGH AUTHORIZED MANUFACTURERS OF LIGHTING AND ACOUSTICAL PRODUCTS.

Certain-teed® Research Report for Architects

Color Tuned

95% of all roofing sales have been in only ten colors

Green accounted for one-third of all shipments for the first nine months of a 12 month period . . . gray was popular in the Northeast and Pacific coast . . . black in the Northeast and Southwest. Tan, brown, red were popular on the West coast. Each area reflecting colors to harmonize with its regional architecture.

Famed color consultant conducts survey

Color consultant, Beatrice West, from findings based on an extensive national survey, has color-styled Certain-teed's new asphalt roofing line. The resulting 10 "Color-Tuned" colors completely meet and satisfy the demands of builders and home owners.

An end to color confusion

Certain-teed's "Color-Tuned" colors have put an end to color confusion, and are right in tune with builders' and home owners' demands. For the right color in roofing specify Certain-teed's "Color-Tuned" roofing shingles.

Color Service Division, Dept. AF
Bestwall Certain-teed Sales Corp.
120 E. Lancaster Ave.
Ardmore, Penna.
Please send me additional information on Certain-teed's 10 "Color-Tuned" colors.
Name................Title.........
Company.........................
Street...........................
City............Zone....State.....

The Top Ten

Mail coupon for information regarding report that determined the Top Ten Roofing Colors.

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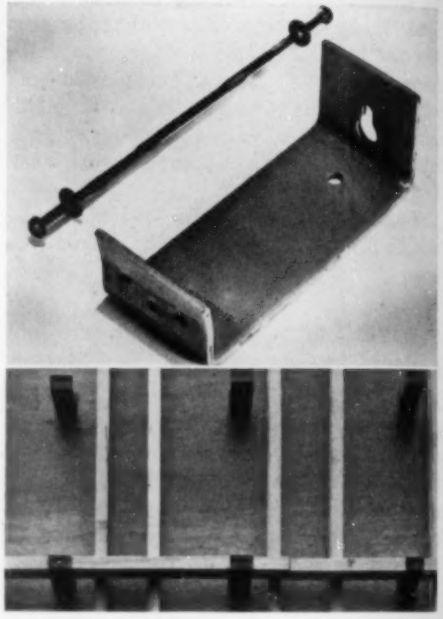
CLEVELAND, OHIO
DALLAS, TEXAS
DES MOINES, IOWA
DETROIT, MICH.
EAST ST. LOUIS, ILL.
JACKSON, MISS.
KANSAS CITY, MO.
MINNEAPOLIS, MINN.
WILMINGTON, DEL.
RICHMOND, CALIF.
SALT LAKE CITY, UTAH
TACOMA, WASH.

flects light—and so, insulates. The paint contains aluminum flake pigment, asphalt, asbestos fibers, and color pigments. Available in eight colors, *Luma-Tint* is priced at $6.70 to $7.10 a gallon.

Manufacturer: Aluminum Company of America, 1501 Alcoa Building, Pittsburgh 19, Pa.

ONE-PIECE BRACKET reduces concrete forming time

A simple bracket for fastening plywood concrete forms is said to make concrete forming 20 to 40 per cent faster than conventional systems. A tear-drop slot in one arm of the bracket, called *Ply-Tie Holder*, fits over and secures the head of a special form tie; the other arm holds the waler or brace in place (see photo). Since the waler merely drops into a procession of holders along the entire length of the wall, a minimum of nailing is necessary. In addition, formwork can be quickly stripped by springing the walers loose and releasing the tie holder with the tap of a hammer. Price per holder: about 80 cents.



Manufacturer: Trueforms Inc., 414 Times Square Building, Seattle 1, Wash.

PORTABLE PIPE BENDER forms conduit easily and safely

Using this $595 portable pipe bender an electrician can make 90 degree bows, doglegs, or offsets in 1 inch diameter steel conduit at the rate of three per minute. Called the *Condumatic*, the new machine is designed to eliminate the sweat and the hazard of hand bending—a routine construction job which, according to labor union records, causes more accidents among electricians than any other on-the-job activity. With the *Condumatic*, steel or aluminum conduit is bent by a lever arm pushing upward against a bending head. Power is supplied by a ⅓ horsepower motor, and since the bending is done entirely by pressure within the machine, the

Condumatic requires no anchoring or fastening. To move from one job to another, or from deck to deck, the *Condumatic* is wheeled about much like a golfer's caddy cart. Weight: 160 pounds.

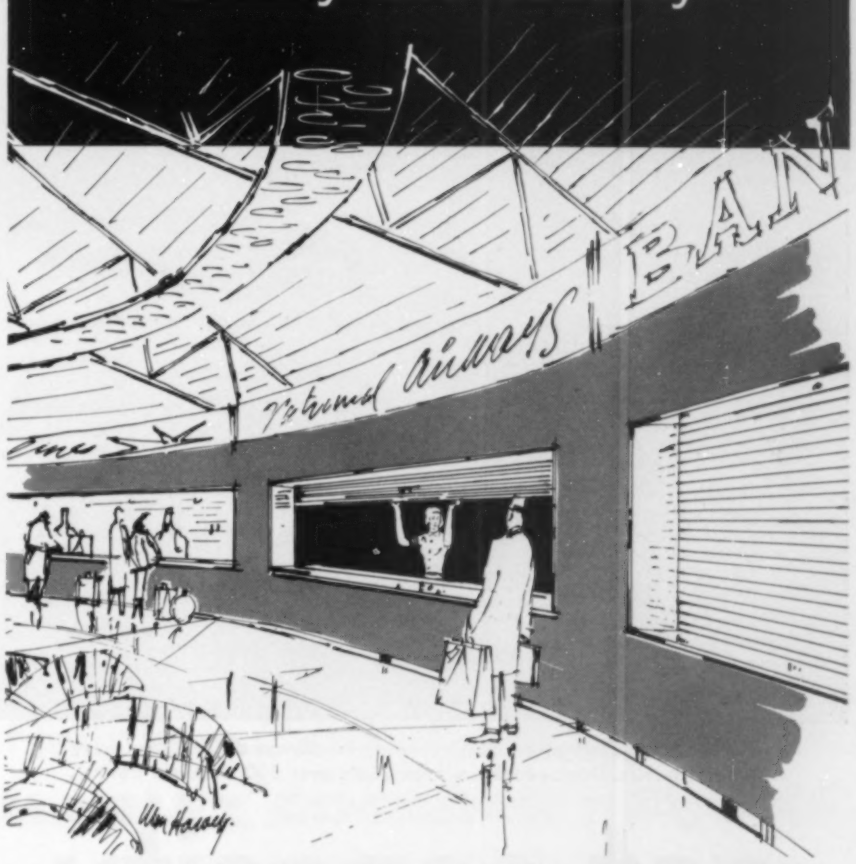
Manufacturer: Chamor Manufacturing Corp., 43-63 11th St., Long Island City, N.Y.

SAFE FASTENING GUN
will not fire through thin walls

Conventional fastening guns actuated by powder cartridges sometimes fire right through thin concrete or sheet steel partitions. But the *Flite-Check*, the pistol-type fastening tool pictured here, is engineered to stop an overdriven fastener before it leaves the gun, thereby ending the danger of flying fasteners. Control of the fasteners is accomplished by tapered interceptor jaws that clamp down on the overpowered fastener (or one that hits a soft or thin spot and travels too fast) and stops it dead in its tracks. To ready the tool for another fastening the operator simply pulls it off the wall surface. Price for the *Flite-Check:* $149.50.

Manufacturer: Ramset Fastening System, 460 Park Ave., New York 22, N.Y.

continued on page 148



beauty and security

the pygmee rolling counter door

This is Balfour's new **pygmee rolling counter door;** it is a new concept in counter closure design.

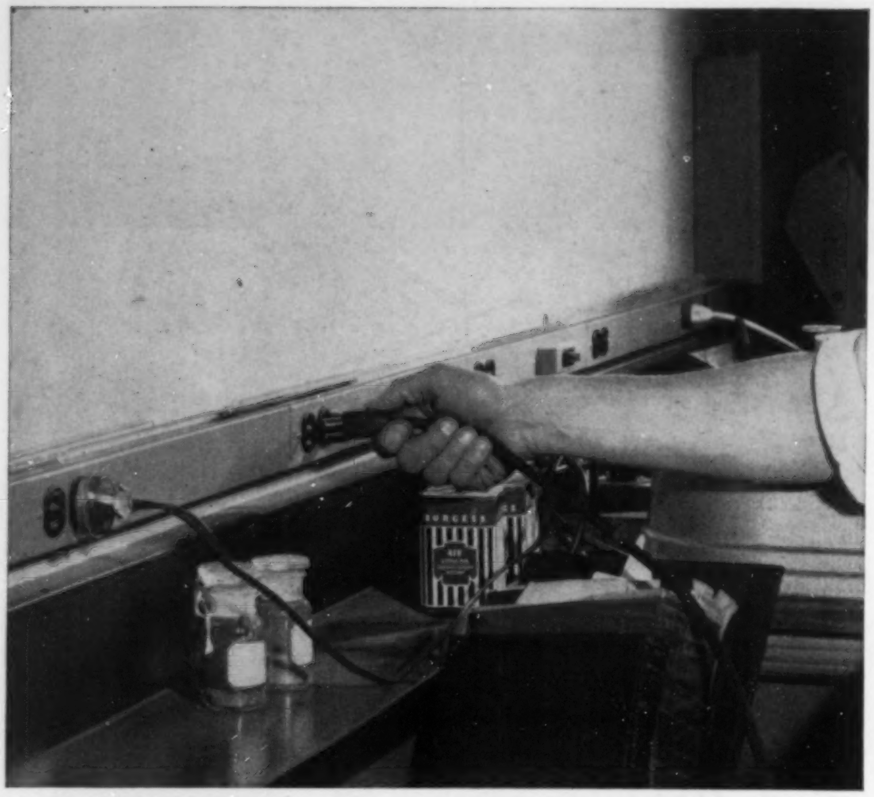
From its extruded alumilited curtain to its ingeniously concealed hardware and minimum space requirements, the **pygmee** has been **designed** to blend with the dignity, elegance and grace of contemporary architecture.

From the exclusive security features of its guides and bottom bar to its "silent-glide" nylon bands and precision balancing, the **pygmee** has been **designed** to achieve the ultimate in utility and security.

The **pygmee rolling counter door** is custom built to your specifications for counter closures in ticket offices, banks, hotels, cafeterias, concession stands . . . wherever maximum security features must conform with the smart, clean lines of today's architecture.

You'll find full specification data on the new **pygmee** door in Sweet's Files. Or, for your personal copy of the **pygmee** catalog, write to Walter Balfour today.

Balfour
pygmee doors
Walter Balfour & Co. Inc., Brooklyn 22, New York



Surfaceduct is a two-piece, all-purpose lay-in raceway designed for every type of service. Device covers accommodate over 300 standard devices.

get capacity

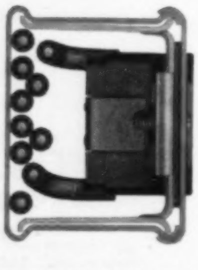
for expansion with NE Surfaceduct

Here's an all-purpose electrical surface raceway that's designed with the capacity to provide for today's needs and for future expansion of industrial and commercial systems.

The free area construction of NE Surfaceduct permits installation of up to 10 No. 6 conductors even with the devices installed. A minimum number of assembly fittings meets the requirements of every type of installation.

What's more NE Surfaceduct holds installation time to a minimum. You simply attach the base, snap in patented bridges to retain the wires and hold the devices, then snap the cover in place.

Learn the whole story about NE Surfaceduct—write for a free copy of the new NE Surface Raceway handbook today.



Surfaceduct's patented bridge . . . retains wires during installation . . . locks capping in place . . . serves as method of securing devices anywhere along the raceway.

Listed by Underwriters' Laboratories, Inc.

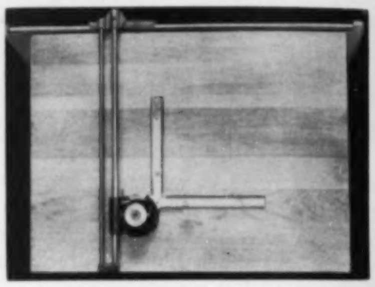
Write for the new raceway handbook today!

National Electric Products

PITTSBURGH, PA.
2 Plants • 12 Warehouses • 41 Sales Offices

ELBOWLESS DRAFTING MACHINE engineered for increased accuracy

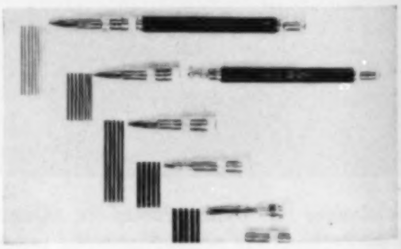
Unlike standard pantograph-type drafting machines, the new *Glideline* model has no free-swinging angle arm with a flexible elbow. To move around this board the draftsman travels the instrument vertically or horizontally along rigid steel runners (see photo). Such a highly stable and compact construction, according to the manufacturer, not only permits more accurate line drawing, but also eliminates machine overhang (a virtue especially advantageous in crowded drafting offices or classrooms where protruding machine elbows create a natural hazard to the draftsman's work). One-hand operation is listed as another favorable characteristic. However, *Glideline* equipment, by design, can not be transferred from one board to another of a different size. A small machine (board size: 30 by 42 inches) sells for $144; the largest model (48 by 96 inches), $180.



Manufacturer: Glideline Corp., 300 South Potomac St., Waynesboro, Pa.

VERSATILE DRAFTING PEN inks 1,000 feet of line on one filling

The *Grafika* capillary-controlled drafting pen, pictured below, is designed both for ruling and lettering work. It offers architects and draftsmen decided time savings (an estimated 25 per cent for ruling, 75 per cent for lettering) in that it holds enough ink to draw a line at least 1,000 feet long without refilling. The maker reports that rubber-base, fountain pen, colored, or India inks—even water colors—can be used with the *Grafika* on a variety of surfaces (paper, film, cloth, and glass). A de luxe, $88 set includes pen, pump for filling, 5 ruling nibs, lettering attachments, 6 lettering nibs, cleaning tool, and freehand attachment. Cost of pen alone: $15.



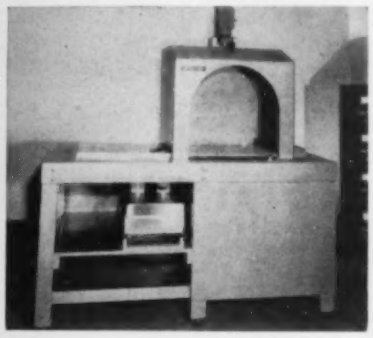
Manufacturer: Ozalid Div., General Aniline and Film Corp., 6 Corliss Lane, Johnson City, N.Y.

GRAPHIC ARTS FIXATIVE
sprays odorless and drys odorless

A new fixative spray for protecting graphic art work may end the discomfort of continuous "fixing" in close quarters, for it is completely odorless, wet or dry. Appropriately named *Odorless Acrolite* and said to be radically different from common fixatives in its chemical composition (the manufacturer withholds specific data), this new solution will not wrinkle paper or alter tones or colors; and it produces a reworkable matte finish. In addition, it is nonflamable. Priced higher than other sprays on the market, 6 ounce cans sell for $1.25; 12 ounce for $1.96; 16 ounce for $2.25.

Manufacturer: Acrolite Products Inc., 108 Ashland Ave., West Orange, N. J.

MICROFILM READER
prints filmed plans in seconds



It takes just 50 seconds for Remington Rand's $5,000 *Reader-Processor-Enlarger* machine to turn out a 17 by 22 inch blow-up of a microfilmed drawing or floor plan. These work-prints are produced damp-dry (but smearproof), with all details sharp and clear, and will, it is claimed, stand up to ten years' use. Developed specifically for reproducing 35 millimeter film filed on punched cards, the new machine also permits direct viewing of the film and should be of great help to large architectural and engineering firms and their bigger clients who must handle and store acres of drawings.

Manufacturer: Remington Rand Div., Sperry Rand Corp., 315 4th Ave., New York 10, N. Y.

PORTABLE ADDING MACHINE
figures in feet and inches

A 12-pound portable adding machine, designed for solving architectural and engineering field problems on the job, adds and subtracts feet, inches, and fractions of inches—½s, 4ths, 8ths, and 16ths. Marketed in hand or electric models, machine assures accuracy in computation plus considerable time savings, as there is no need for the operator to first convert common fractions to their decimal equivalents. Cost: $229.

Manufacturer: Victor Adding Machine Co., 3900 N. Rockwell St., Chicago 18, Ill.

END

Hallmark Cards

Hallmark Cards finds **standard**

MARLEY COOLING TOWERS

fit **every** situation . . .

In selecting a cooling tower for its magnificent new general offices in Kansas City, Hallmark, world leader in quality greeting cards, faced some special problems. The tower had to be completely screened to be compatible with the clean lines of mid-America's outstanding building designed by Welton Becket & Associates. Minimum plan area was of utmost importance. And, of course, complete screening of the tower must not interfere with its ability to deliver adequate and dependable cooling water for the 1500-ton air conditioning system.

Under such conditions, you might expect the tower selected to be of special design, but Hallmark found the "just-right" tower in the *standard Marley line*—a Marley 2-cell Single-Flow.

Recently, at another Hallmark plant in Lawrence, Kansas, selection of a cooling tower for the 550-ton air conditioning system also posed certain special problems. This time, a *standard* Marley Double-Flow Aquatower was the economical choice. And at still other Hallmark properties, Marley packaged steel Aquatowers have been chosen as best for the job.

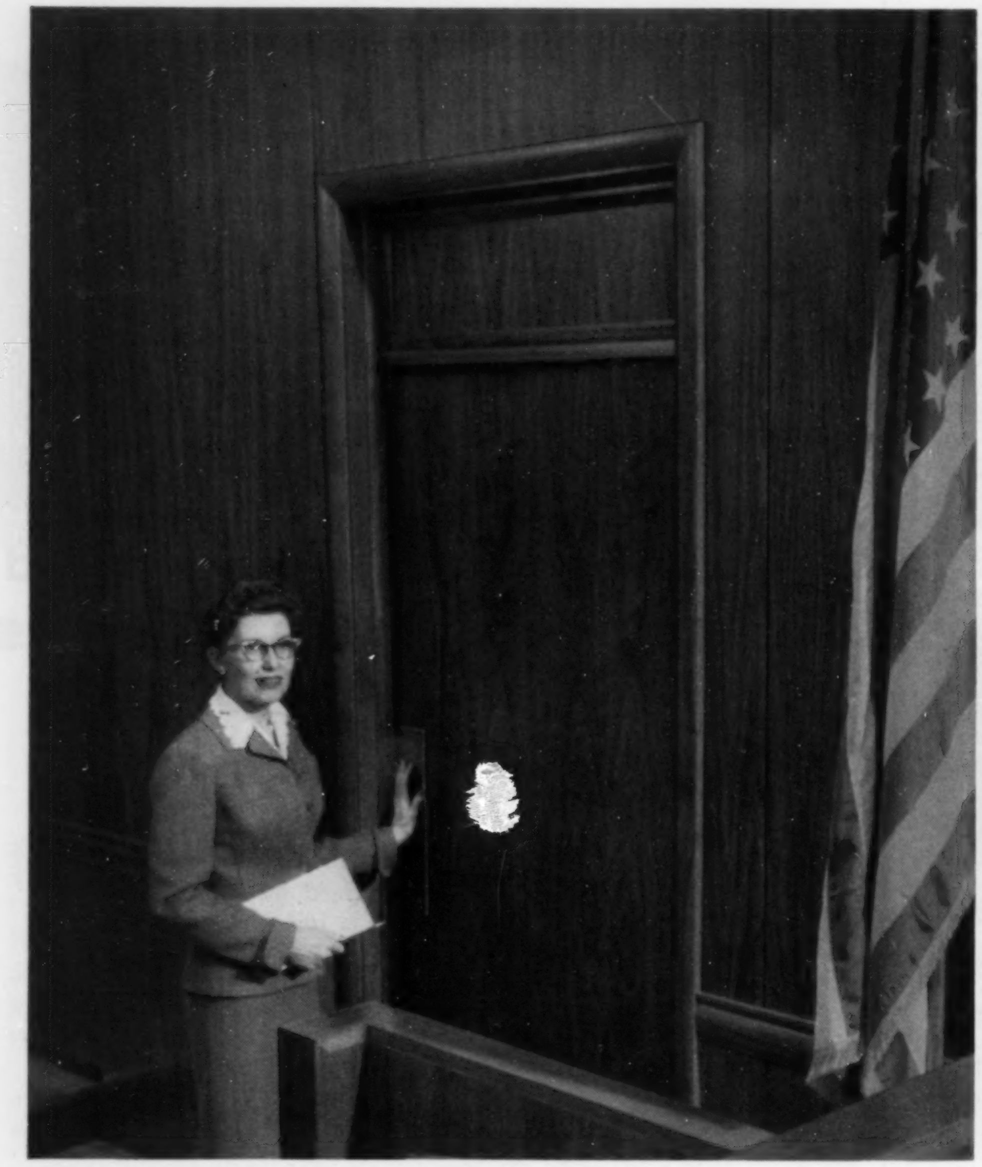
Every water cooling job is in some sense "special", yet you will find in the complete Marley line a *standard* tower that is "just right" from every standpoint—architectural compatibility . . . mechanical equipment . . . capacity . . . economy. For information, write today or see your Marley Application Engineer in any of 55 cities.

MARLEY **The Marley Company**

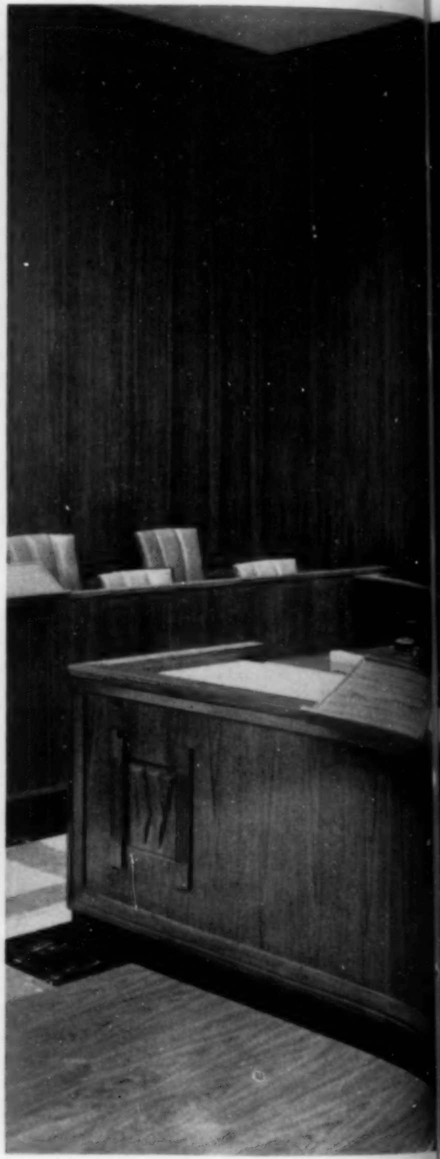
Kansas City, Missouri

bring out all the beauty of your de

...call on the cr



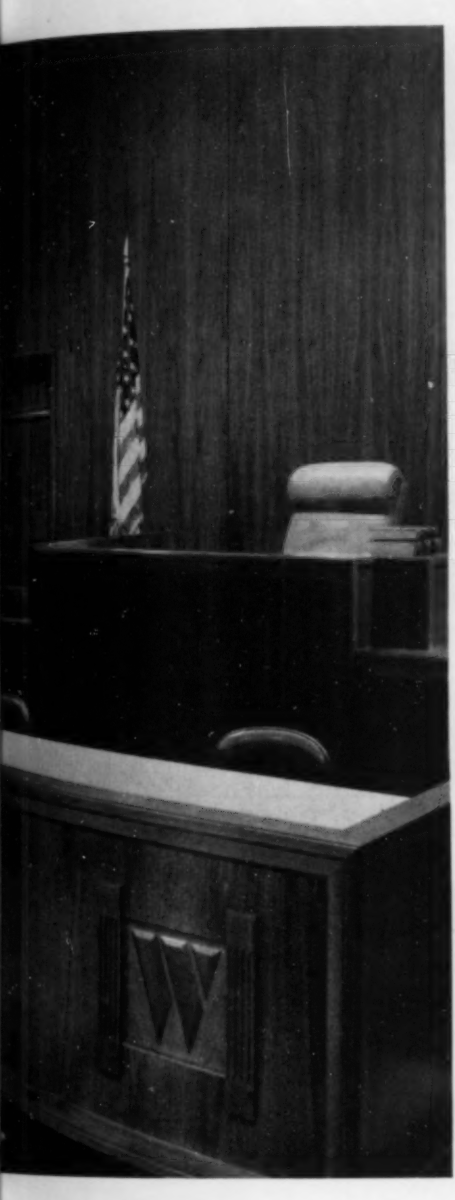
RODDIS DOORS ***in the Wood County Courthouse, Wisconsin Rapids, Wisconsin*** (Donn Hougen, Architect) display the rich graining and texture that makes them first choice of many leading architects. Roddis Doors come in a broad variety of imported and domestic woods for any installation . . . institutional, commercial or home. Specify *in the white . . . primed and sealed . . .* or *completely prefinished* to your sample. Roddis offers one source for all your wood door needs—solid and B or C-label fire doors, guaranteed for life; hollow core and X-ray doors.

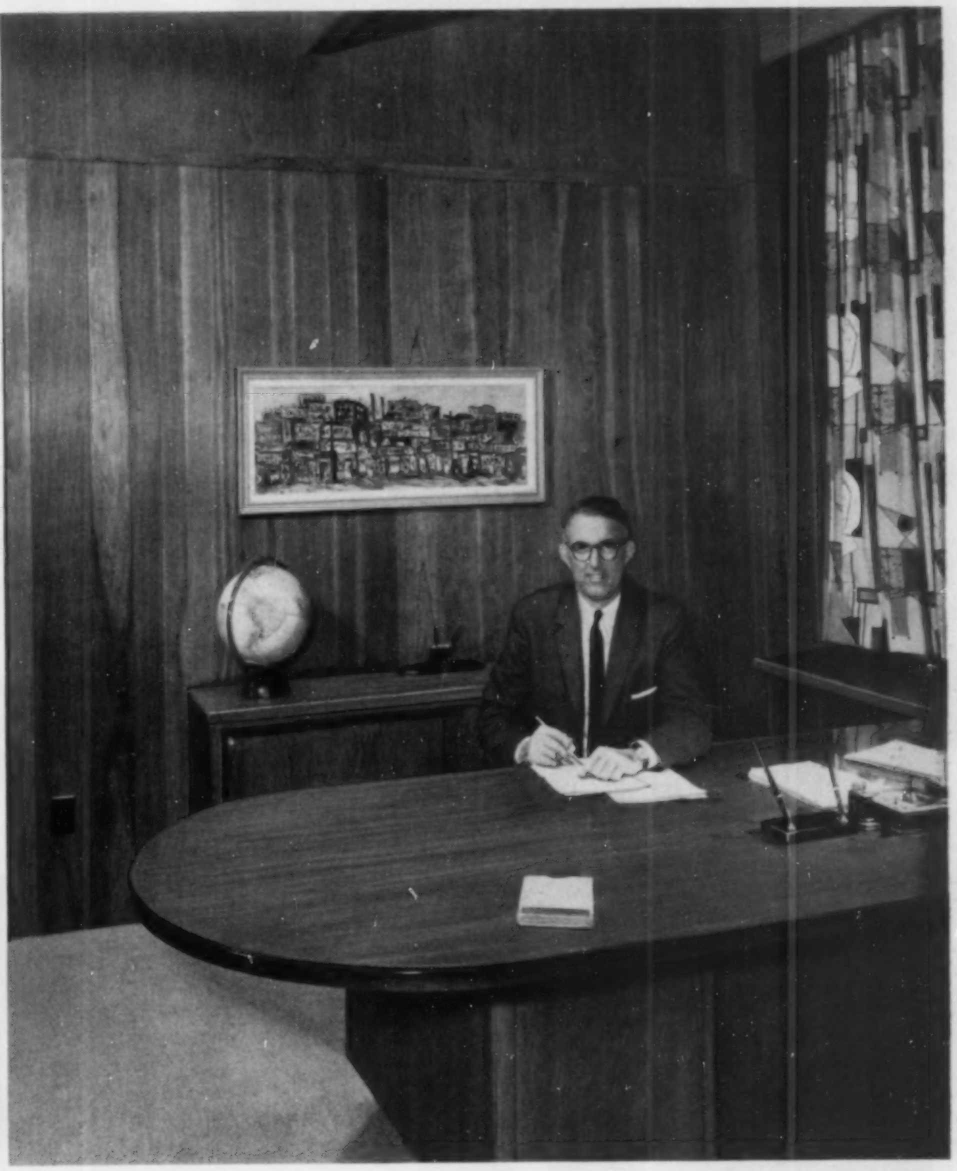


RODDIS HARDWOOD PANELING lends richness and dignity to the main courtroom in the Wood County Courthouse. To achieve this striking effect, beautiful walnut veneers were selected and matched by Roddis craftsmen. Other Roddis paneling in this in-

Doors . . . hardwood paneling . . . Craftwall . . . fine woods for every application.
May we help? Roddis' expert consultants are at the service of America's architects.

designs
craftsmanship of Roddis



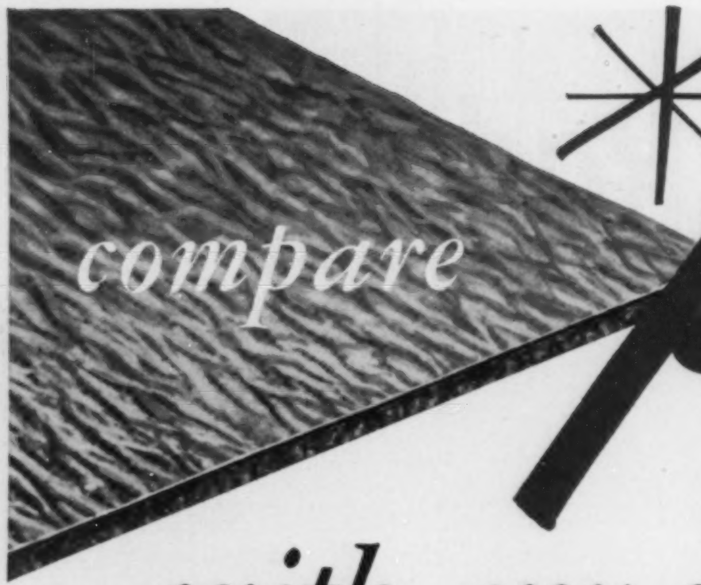


stallation includes Aspen, Oak and Birdseye Maple. Let Roddis provide architectural hardwood paneling to enhance your designs. From your specifications we will create hardwood panels in any special size . . . beautifully veneered in the wood of your choice.

RODDIS CRAFTWALL paneling in the office of Elmer L. Winter, President, Manpower, Inc., gives an air of warmth and efficiency. Craftwall is the perfect background—in offices, public buildings or private homes. There are nine handsome woods: *Elm, Birch (2 tones), Cherry, Maple, Oak, Knotty Pine, Mahogany and Walnut.* Each with a special finish that shrugs off scuffs, stains and dirt . . . retains original beauty. The 1/4" panels come in modular sizes—fire-retardant treated, if desired. Craftwall is guaranteed, in writing, for the life of the installation.

FOR COMPLETE SPECIFICATIONS, SEE *SWEET'S ARCHITECTURAL FILE,* OR WRITE

RODDIS PLYWOOD CORPORATION, MARSHFIELD, WISCONSIN



compare *PM with any other type of

*only *PM offers all of the features necessary to provide a true, impermeable vapor seal against moisture migration*

COMPARE the permeance ratings . . . for on this point alone, "PREMOULDED MEMBRANE" stands head and shoulders above all other, so called, vapor barriers on the market. In fact, as you will see by the chart below "PREMOULDED MEMBRANE" is over 16 times more impermeable then the next ranking material.

MATERIAL	WATER VAPOR TRANSMISSION (in *perms)	
	LOW	HIGH
Sealtight "PREMOULDED MEMBRANE"	.0066	.0066
Polyethylene Film (.004 in. thick)	.097	.108
55-pound roll roofing	.030	.081
Duplex paper (coated both sides—reflectors material, reinforced)	.304	.347

*PERMS—grains per square foot per hour per inch of mercury difference in vapor pressure at standard test condition.

COMPARE the strength . . . "PREMOULDED MEMBRANE" is strong enough to maintain its permeance rating after it has been subjected to the pouring of aggregate, trundling of wheelbarrows and installation foot traffic. Resists rupturing and tearing. How many other materials will perform like this under the above circumstances?

COMPARE the ease and speed of providing a permanent installation . . . "PM" may be laid directly over the tamped grade or fill . . . joints are then efficiently sealed with Sealtight Catalytic (non-setting) Asphalt, thereby providing a monolithic vapor seal with mechanically sealed joints, that will expand and contract with the concrete slab above, without breaking the bond.

vapor seal on the market!

COMPARE before you specify or install your next vapor seal . . . don't risk your reputation by using an inferior "so called" vapor barrier. "PM," the industry's only true, impermeable vapor seal, is actually the most economical vapor seal on the market when you consider the reduced maintenance and redecorating costs realized through the complete elimination of moisture migration into the structure. When specifying or installing your next vapor seal be sure it meets these Sealtight standards of quality: permeance rating of only .0066 grains per square foot . . . resistant to rot, mold and termites . . . strong enough to resist tearing and puncturing . . . expandable . . . quickly, easily and permanently installed—only "PREMOULDED MEMBRANE" meets them all.

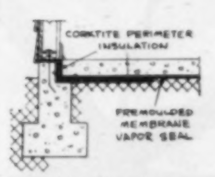
We sincerely advise and invite your comparison of "PM" against all other vapor barrier products . . . we're sure that once you do you will also agree that there's only one true, impermeable vapor seal on the market . . . Sealtight "PREMOULDED MEMBRANE."

***Premoulded Membrane** *. . . the industry's only TRUE, impermeable vapor seal*

TRADE MARK

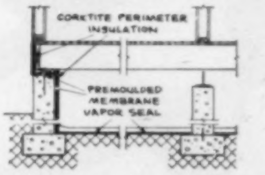
ideal for all types of construction

SLAB-ON-GRADE



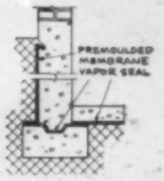
Installation of "PREMOULDED MEMBRANE" completely isolates slab from any moisture originating in the site and Sealtight Corktite perimeter insulation effectively insulates edge of the slab, thereby eliminating heat loss through the slab perimeter.

CRAWL-SPACE



The proper installation of "PREMOULDED MEMBRANE" and Corktite removes all danger of moisture migration, condensation and oxidation of metal installations in the crawl-space area . . . eliminates need for ventilation.

BASEMENT



"PREMOULDED MEMBRANE" properly applied to the exterior of the basement walls as well as beneath the floor slab insures a warm, dry, liveable basement. Prevents any movement of vapor or capillary movement of free water.

WRITE TODAY
for complete information including our Design Manual and series of "TECH-TIPS."

SEALTIGHT
W. R. MEADOWS, INC.
6 KIMBALL STREET · ELGIN, ILLINOIS

W. R. MEADOWS, INC. DEPT. 6

Gentlemen:

Please send, without obligation:

☐ "DESIGN PRACTICES" Manual

☐ "TECH-TIP" Series

☐ Have representative call.

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TITLE________________

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CITY________ STATE________

Auditorium dome erected in 9 days by a 5-man crew

John J. Kane Hospital, Allegheny County, Pittsburgh, Pa. Auditorium is 109 feet in diameter, seats 682 people.

This auditorium dome for the John J. Kane Hospital went up in a hurry. Four workmen and one superintendent, using one crane with a 125-foot boom, erected the steel work in 9 days.

In preparation for the dome erection, a 20-inch pipe pole with a 48-inch diameter plate top was erected and plumbed. The spider or top section of the dome, which is about 11 feet in diameter, was then placed on top of the pole and bolted down.

The USS Structural Steel ribs were prefabricated on a 53′-7½″ radius. They were made in two sections and were field-welded to form one rib almost 80 feet long, depending on the base elevation. The first rib was erected on the west side, followed by one on the east side. Erection then continued clockwise from both points.

The horizontal structural members were bolted in as erection progressed. Most of the bracing was omitted during erection and was filled in by the detail gang later on.

All sections were prefabricated in the plant of the Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.

QUICK DELIVERIES! Recent expansion of production facilities assures quick deliveries and continuing availability of Steel Shapes and Plates to accommodate the increasing demands of the Construction Industry. Just call the nearest office of United States Steel. The telephone number is listed in local directories.

For your copy of "Hot Rolled Carbon Steel Shapes and Plates," a handbook containing details, dimensions and weights of USS Shapes and Plates—write to United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

USS is a registered trademark

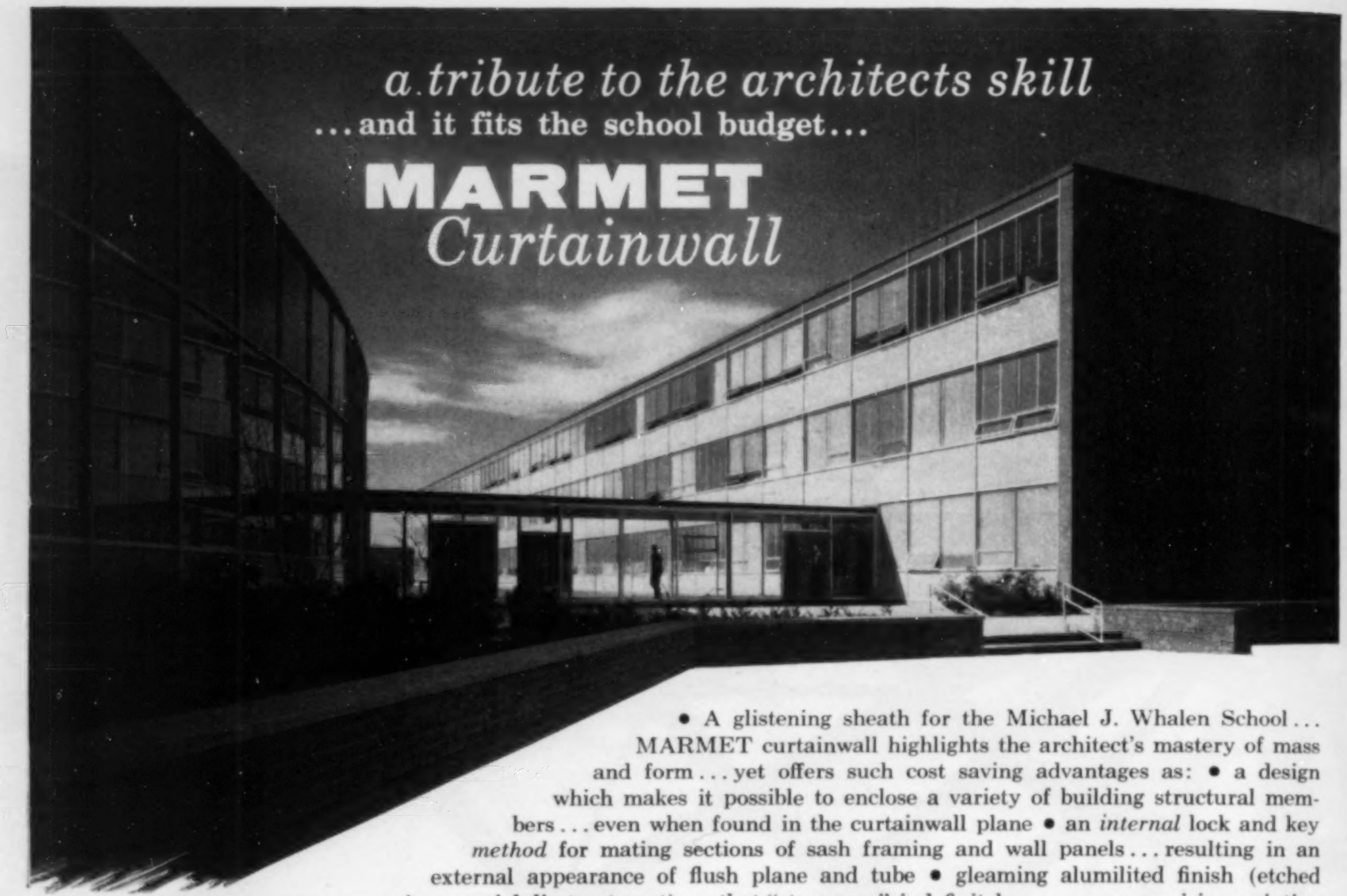
using USS Structural Steel

Auditorium dome fabricated from USS Structural Steel, erected by Adams Steel Erection, Kittanning, Pa. • Contractors: Sherry-Richards, Chicago, Ill. • Architects: Button and McLean—Mitchell and Ritchey, Pittsburgh, Pa. • Resident Engineer: Harry King, Allegheny County • Structural Engineers: L. W. Cook—R. A. Zern, Pittsburgh, Pa.

USS

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel Division—San Francisco
Tennessee Coal & Iron—Fairfield, Ala.
United States Steel Supply—Warehouse Distributors
United States Steel Export Company

United States Steel



a tribute to the architects skill

...and it fits the school budget...

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Curtainwall

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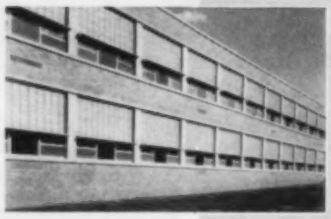

Longfellow Junior High School, Wauwatosa, Wis. Architect, Ebling, Plunkett & Keymar Milwaukee, Wis.

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Pacelli High School, Stevens Point, Wis. Architect, Robert W. Surplice, Green Bay, Wis.

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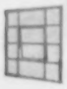

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Wright's early work . . . Napoleon's public works

FRANK LLOYD WRIGHT TO 1910. The First Golden Age. By Grant Carpenter Manson. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y. 228 pp. 8½" x 10½". $10.

Any new book on Frank Lloyd Wright must find its place among a formidable list of earlier titles, not the least of which is *A Testament*, Wright's own most recent book. Wisely, Author Grant Manson, who is Assistant Dean of Fine Arts at the University of Pennsylvania, planned his book to supplement the earlier literature.

Neither a biography nor an architectural monograph, the book is something in between. In his foreword, Henry Russell Hitchcock labels it "usable history," and, perhaps, this is the best description of the book. As usable history, the book does a scholarly job of putting Wright's work in sequence and relating it to the events in his life. Of interest to those who have read most of the earlier literature, the Manson book seems conscientiously to go about the business of picking up loose ends. In this respect, the special concentration on the so-called "bootleg houses"—Wright's own term for the houses he planned at night while still working during the day for Adler and Sullivan—is especially important (photos left). These and the details in his early work in the Oak Park studio are reminders that the Prairie House did not emerge full-grown, and that Wright did indeed start from the same point as his contemporaries.

Williams House, River Forest, Ill., 1895

McArthur House, Chicago, Ill., 1892

The book also carries the most complete discussion to date of Wright's kindergarten training and the influence of the Froebel ideas on his later architectural work.

The well-illustrated book makes use of many drawings and photographs which have been out of print for many years, as well as adding some that have never been seen before.

Author Manson plans two more books on Wright which will cover the years from 1910 to the present. Of the three books, the present volume is perhaps the least important, but it is, nevertheless, an important book on a man who will continue to elude complete understanding regardless of how thoroughly readers do their bookwork.

HOUSING THROUGH NON-PROFIT ORGANIZATIONS. Housing, Building and Planning—No. 10. Published by the Dept. of Economic and Social Affairs, United Nations, New York, N.Y. 121 pp. 8½" x 11". Illus. $1.25.

A classic example of what international good can be accomplished by exchange of building information. Here, for the benefit of Latin American nations and at the urging of the UN, the Danes sum up all they know about public housing. Although some of the material is by now a bit cold (the Copenhagen seminar was held in Sept.-Oct. of 1954), the general ideas and recommendations are none the less valuable. One hopes that this special issue of the UN publication *Housing, Building and Planning* will be made available in other languages; most urgently needed is a Spanish translation.

NAPOLEON III AND THE REBUILDING OF PARIS. By David H. Pinkney. Published by Princeton University Press, Princeton, N.J. 245 pp. 6¼" x 9½". Illus. $6.

This book may seem somewhat removed from the concerns of American readers. But for those city dwellers who want to check the performance of their local building czars against that of one of history's greatest, this detailed look at the career of Baron Haussmann will prove more than worth-while.

In the two decades following 1850 Haussman literally rebuilt Paris. His patron, Emperor Louis Napoleon, liked his architecture and city planning to be monumental yet functional, imperial yet popular. In satisfying these demands, and in scraping up the funds to pay for them, Haussmann was ruthless and, up to a point, successful.

That point came when politics would no longer support the massive expenditures (in current value, some $84 billion was spent on public works in Paris between 1850 and 1869). Something had to be sacrificed for the continuation of the empire: Haussmann was given a humiliating,

continued on page 158

though magnificently staged, heave-ho.

Here is food for thought—and material also for a great costume drama.

CITIES IN FLOOD. The Problems of Urban Growth. By Peter Self. Published by Faber & Faber, 24 Russell Square, London W.C. 1, England. 189 pp. 5½" x 9". Illus. $3.50.

This story of Britain's effort to deal with the problem of growing city clusters and diminishing countryside, an effort sometimes panicky, sometimes inspired, reads like a brief forecast of America's own immediate future. Space limitations simply precipitated the crisis in Britain first.

Perhaps Author Self's greatest contribution to current thought on urban growth is his definition of the proper place of the planner. First, he explodes the myth that the planner can be an impartial "coach" who can arbitrate land use disputes with near divine wisdom. Then he goes on to explore the truly creative job that the planner can do if he will get down from his Olympian height and involve himself in the neighborhood relationships that are at the heart of the matter.

Jargon-shy readers should not be frightened away by the book's apparent condoning of planning's special, violent vocabulary (e.g., Blight! Counter Attack!). For happily, verbal exaggeration in *Cities in Flood* is limited to the title and a few of the chapter headings.

TECHNICAL PUBLICATIONS

A selection of new handbooks, textbooks, technical reports, brochures and commercial leaflets, noteworthy for their information content or pictorial format or both

KAISER ALUMINUM IN ARCHITECTURE. Published by Kaiser Aluminum and Chemical Sales Inc., 919 North Michigan Ave., Chicago 11, Ill. 24 pages. Illus. Free.

A new brochure illustrating this firm's wide range of aluminum extrusions and sheet—their alloy properties and uses, and available finishes. A neat, direct presentation.

GLUED LAMINATED AND SOLID WOOD PRODUCTS. Published by Rilco Laminated Products Inc., W-891 First National Bank Bldg., St. Paul 1, Minn. 24 pages. Illus. Free.

The appearance, the advantages, and the application techniques of laminated wood arches, beams, and trusses are discussed and pictured in this well-designed brochure.

ALCOA ARCHITECTURAL STOCKS. Published by Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa. 110 pages. Illus. Free.

A complete 1958 listing of Alcoa's architectural products, from window sills, railings, and sidewalk hatches to nails, I-beams, and curtain wall sheets. Thoroughly documented with photos, dimensional data, cross-section drawings, installation details, and suggested specifications.

APRON REQUIREMENTS FOR TURBINE-POWERED AIRCRAFT. Published by the International Air Transport Association, Terminal Center Bldg., 1060 University St., Montreal 3, Canada. 57 pages. Illus. 75 cents.

What airport planners should know about the construction of airport aprons for handling jet aircraft, with emphasis on factors affecting engine blast, heat, noise, fuel spillage, and the flow of passengers, freight, and baggage. END

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General Electric Zone-by-Zone Air Conditioning in Dallas Home Furnishings Mart permits

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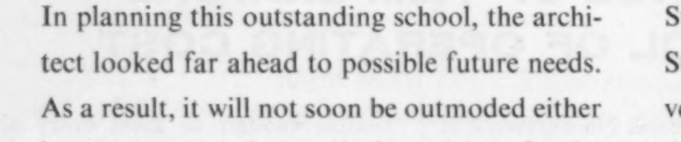

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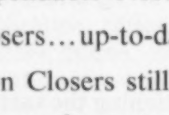

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Excerpts

What other people are saying

CAMERA ARCHITECTURE

In developing an astute architectural awareness, one look is worth a thousand pictures. This is the observation of Perry E. Borchers Jr., professor of architecture at Ohio State University, in a recent issue of The Ohio Architect.

If it is in pictures (rather than words written about them) that the painter feels and responds to the challenge of his contemporaries and the past, it is in buildings (not in pictures of buildings) that the architect, or that part of him which is an artist, finds true challenge and expression.

Architectural criticism, architectural rendering, and architectural photography are art forms in themselves. Their success can be independent of architectural reality, and they cannot encompass it. If they are useful to give us views of buildings we might otherwise never see, we must yet keep them from obscuring our architectural awareness of the buildings we may see. Architectural photography in particular must not substitute for our sight and insight, for one art medium cannot express another.

It is a mistake for an architect to busy himself with the paraphernalia of photography to the extent that he does not see a building but only views it in enlargement or projection. He is in error to correct in pictures with flash bulb and time exposure the brightness contrasts which are part of the architectural reality of a room, to deprecate his own judgment of architectural effects which attract but then escape the camera, or to find approval of his design in the photographs that can be taken of it.

MEMORIES OF THE CITY

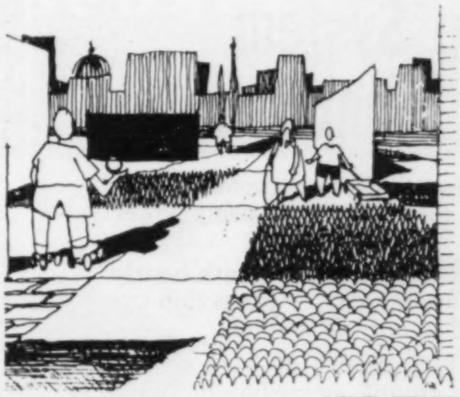
To help today's city builders, Kevin Lynch, an associate professor of planning at M.I.T., and one of his graduate students, Alvin K. Lukashok, have probed people's memories to find out what they, as children, liked about their home towns. The results were published in the Journal of the American Institute of Planners.

What does a child notice in his city? What elements of the physical environment leave the deepest impression? With the objective of answering these two questions, 40 subjects were interviewed for their memories. Twenty-two were M.I.T. students, 18 were nonstudents, with occupations ranging from sociologist to cab driver. Seven were women. None were professionally involved in urbanism or design.

The basic assumption was that present adult memories reflect actual childhood preoccupations, i.e., that items which persist over such a long time span are records of the real, salient, emotionally important experiences of youth.

Features in the landscape may be important for many reasons, of course: because the experience occurs frequently; because of strong emotional ties; because of the relation to the child's needs. In any case, these items are worth the attention of the city builder.

The city "floor": Among the items mentioned most often are the lawns. A lawn is associated with spaciousness and a sense of freedom. Not only just the lawns, but the entire "floor" of his environment is of great importance to the child. Very few things are so close to him for play. Of all the various types of floor coverings mentioned, grass is the best liked, then dirt that can be dug or molded, and after that any smooth surface that allows roller skating or bicycling. Driveways are occasionally mentioned in this regard.



GARDNER ERTMANN

The floor surfaces that a child seems to dislike are asphalt on open spaces that otherwise would remain grassy, and brick, gravel, and cobblestones, places where he can suffer a fall. Of the few people who mention brick-paved surfaces, none talk about the visual qualities of such surfaces, all dislike the uneven texture.

The child is sensitive to the floor and its various coverings because it is the prime

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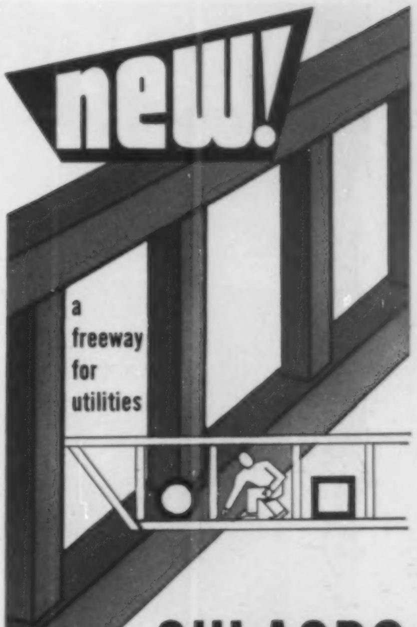

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condition of his main activity—play. This surface, rarely the conscious concern of the designer, so often left to surveyor, contractor, or sheer custom, thus turns out to be the most important sensuous element of all.

Foliage: Trees are mentioned with great frequency and are remembered with great warmth. When describing an ideal street these are usually included, and they are mentioned in the preferred downtown sections. Children like trees and foliage for many reasons. They provide the ideal environment for play. Offering shade in the summer, they can be climbed, they can be carved, they are hiding places. They are places where children can create their own fantasies. Trees are alive, they move but are always there. They regularly change their form in step with the great seasons.

Play areas: One of the interesting things coming out of the interviews is that children seem to prefer to play anywhere but the playground. The garage and garage area, so often the insoluble part of many architectural design problems, is usually remembered by the child with great affection. Children remember garage roofs as places to climb to and jump off from. Garages seem to have the importance of enclosed spaces without the accompanying authority of adult organization. A child's play is most satisfactory when it allows him the greatest opportunity to manipulate his environment according to his needs: to imagine, create, and hide. A well-differentiated world, and one that is plastic to his hands and mind, is his desire. That is perhaps why so many people remember with pleasure the overgrown lot, thick brush, and woods.

Hills: The majority of the interviews mentions the local topography in one way or another. The hilliness or flatness of an area is noted in the basic descriptions, and, on the whole, people remember keenly and with pleasure the hills that were in the vicinity.

Transport and traffic: In the interviews there is a strong but ambivalent feeling toward mass transport vehicles. The delight of watching trains, buses, or trolleys is usually paired with impressions of dirt and noise.

It may be that we sometimes make mistakes in isolating our railroads or burying our transit vehicles. For a child at least, these seem to be a very adventurous part of city life. As far as traffic in general is concerned, it is remembered as a mild interference with play rather than a more serious threat. It is also, like mass transport, a source of pleasure to the child.

Space: The sense of space is put in strong terms, and with positive effect, in at least 17 of the 40 interviews. This consideration, often felt to be restricted to technical conversations among professional architects and planners, is keenly felt, and often articulated as such, by people who rarely think of these problems technically.

Crowdedness has an overwhelming effect

continued on page 166

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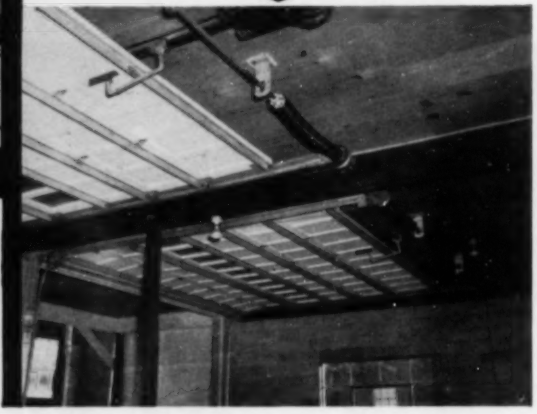
Another view of the low headroom design — notice the minimum distance from track to ceiling.



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The machinery repair shop housed in this flat-roofed building added a ceiling to create insulation space. This reduced the headroom to less than a foot. A Raynor Low Headroom installation was made, using only 6½ inches for headroom! This modification not only eliminated costly alterations, but also retained the original door opening. If your job presents an installation problem, contact Raynor's Engineering Department for the most economical solution... shop drawings furnished free on request.

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on the impression formed of the physical environment. The fact that it occurs only 13 times out of 40 does not give a strong enough indication of how widely this feeling pervades the memory. It is the obverse of space, but its more pressing and immediate aspect. As in the case of space, it is one of the earliest things mentioned and there is little mistaking the effect.

In no interview does the subject complain about too much space. Rarely is there even a reference to the emptiness or the loneliness of great spaces, and although it is generally felt by designers that a public square can be too large to be comfortable and by their excessive dimensions destroy just those qualities for which they are designed, yet in none of these interviews do we see any reaction remotely echoing this objection.

TODAY'S CLIENT

AIA President Leon Chatelain Jr., addressing the Annual Convention of the Associated General Contractors of America, described the building industry's typical customer today.

Our client has changed. It is very seldom today that we design a building for one person. This is the age of the corporate client—the collective client. The criteria for an office building are decided by a committee appointed by and responsible to a board of directors. A church project is supervised by a building committee. A school—when the job is planned properly—is dependent upon the entire community for the conceptual process which guides the design. There is no segment of the public to whom we can point and say: this has no connection with architecture and building. The Girl Scout leader and housewife of today are among the people who will decide upon a new civic center, a church, a school, or even a bank tomorrow.

ATOM AGE DESIGN

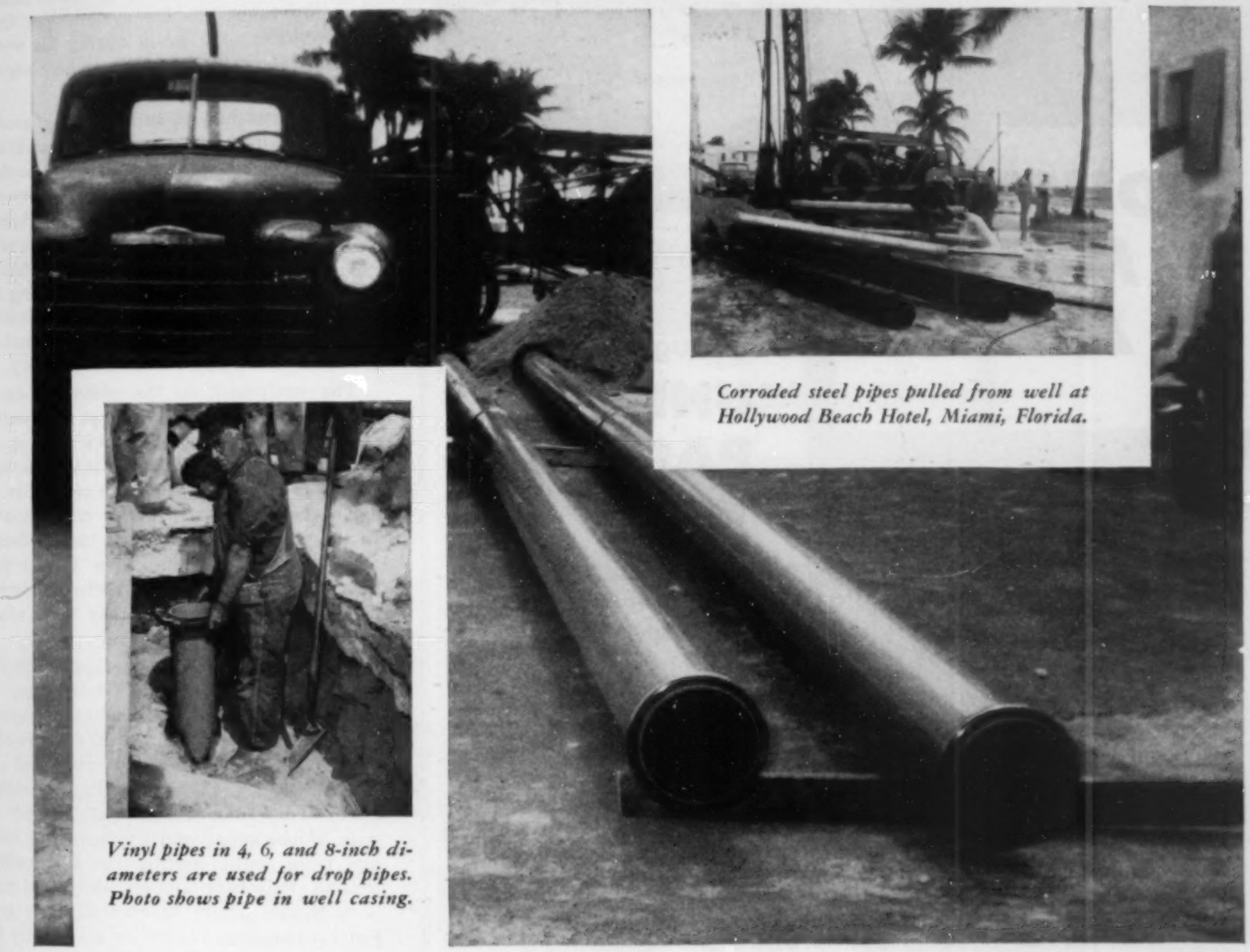
To cope with the atom, architects have had to develop a new set of design details. Many of them were revealed by Sir John Cockcroft in his recent talk delivered before the Royal Institute of British Architects and printed in the RIBA Journal.

Designs of the new radio-chemical laboratory at Harwell was dominated by the fact that the chemists there work with radioactive solutions. Some of these emit penetrating gamma rays—so the chemists have to be shielded by lead walls, built up from prefabricated interlocking bricks. Other materials emit high-speed electrons or particles. These are easily stopped by a

continued on page 16

Another new development using

B.F.Goodrich Chemical *raw materials*



Corroded steel pipes pulled from well at Hollywood Beach Hotel, Miami, Florida.

Vinyl pipes in 4, 6, and 8-inch diameters are used for drop pipes. Photo shows pipe in well casing.

SO THEY REPLACED THE CORRODED PIPE

WITH GEON RIGID VINYL

DEEP wells are often used to provide cooling water for refrigeration systems. In the Miami, Florida, area wells supply salt water—fine for cooling but rough on steel drop pipes that in many cases have corroded and failed in less than 18 months.

Now rigid vinyl pipe made of Geon polyvinyl materials is used for the drop pipe which slips inside a driven steel casing. This vinyl pipe is unaffected by salt water, as well as galvanic corrosion. A built-up plastic O-ring at the bottom of each drop pipe seals the pipe within the casing.

Geon vinyl pipe makes a big hit with installation crews too. It's lightweight and easy to handle. As the pipes are lowered into the casing, they are readily assembled with a coupling by solvent welding into a continuous length that may extend to a depth of 200 feet.

In any piping system where you have a corrosion problem, consider rigid vinyl pipe made of Geon. For informative booklet write Dept. LV-2, B. F. Goodrich Chemical Company, 3135 Euclid Avenue, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

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B. F. Goodrich Chemical Company
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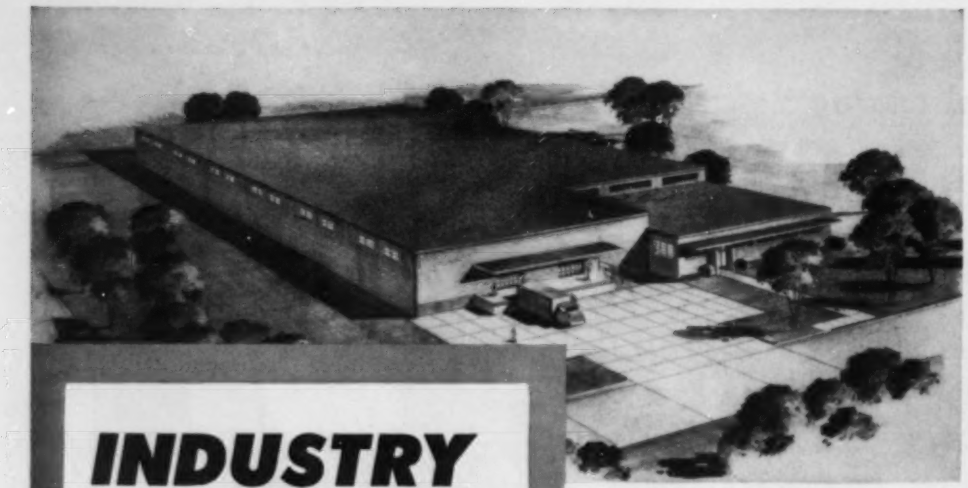


INDUSTRY MOVES AHEAD..... *throughout the* "UNION PACIFIC WEST"

As one example, a nationally known rubber company recently established a new sales branch and warehouse in Union Pacific's Omaha Industrial District where several other large concerns are now located.

Executives of the rubber company gave primary consideration to the following important factors in selecting the Omaha site.

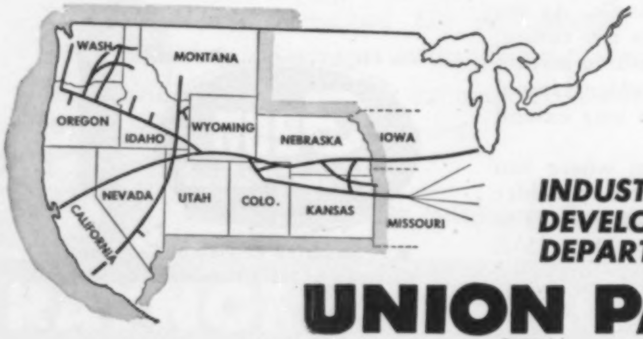
It offered a strategically located point for improved distribution service to customers in Nebraska and neighboring states.

The convenience of Union Pacific's rapid and reliable shipping service in that midwest area.

The fact that the U.P. Industrial District provided an attractive site on level ground, complete with paved streets and necessary utilities.

There are a number of other advantageously located and fully developed industrial tracts in the western area served by our railroad.

For confidential information regarding these tracts, we suggest you contact our nearest representative or get in touch with us direct.



INDUSTRIAL DEVELOPMENT DEPARTMENT
UNION PACIFIC
Railroad
Omaha 2, Nebraska

small thickness of material, but another hazard has to be guarded against. Chemists on occasion spill the solutions, and the radioactivity appears in the form of dust and can get into lungs. Some of these materials are so highly toxic that a person can only take into his system less than one millionth of a gram during his working life. The laboratory has to be designed to cope with this hazard.

Ventilation has to be extremely good—up to 200 air changes an hour. In addition, all fume hoods have an inward air-flow of up to 150 feet per minute. To provide for this the upper floor of the laboratory is devoted mainly to ducts for incoming and outgoing air. The incoming air has to be heated and filtered and the outgoing air passes through electrostatic precipitators and filters to take out any radioactive particles sucked out of the laboratory.

The equipment in the plutonium-handling wing is notable for its use of so-called glove-boxes. All operations are carried out inside these closed boxes by gloves so that hands are shielded from the radioactivity. These boxes become highly contaminated in the course of time. They can be decontaminated by wheeling them to the face of a decontamination room where frogmen can clean them, protected by their ventilated suiting.

The mildly radioactive liquid effluents from this building drain into delay or "hold-up" tanks situated in the courtyard. The drainage pipes used are fabricated from polythene or stainless steel and are carried in covered, bitumen-lined, concrete ducts. This facilitates inspection and repair of the pipes and prevents any leakage from contaminating the surrounding ground. Polythene and stainless steel have been chosen partly because of their good general chemical resistance and partly because they can be decontaminated easily.

The delay tanks are of two types: mild steel hard-rubber-lined for the more active liquors and concrete-lined internally with a rubber latex cement coated with troweled neoprene—for the very low activity effluents. All tanks are contained in concrete "saucers" which are bitumen-lined sufficiently to give a protective capacity equal to the tanks contained.

When full the contents of the tanks are sampled and tested and, if the activity of the effluent is below a figure which has been set for that particular tank, the liquid is pumped to the main active drain which serves the whole establishment. The liquid then flows by gravity to the effluent treatment plant where the daily effluent from all delay tanks is batched, treated, and finally discharged to the Thames. We are allowed a certain ratio of radioactivity which we can discharge each month. If the activity level of the effluent in the delay tank is higher than expected, the contents are transferred to a tank wagon and taken to the effluent plant for special treatment. If the radioactivity is very high it is stored until it decays. END

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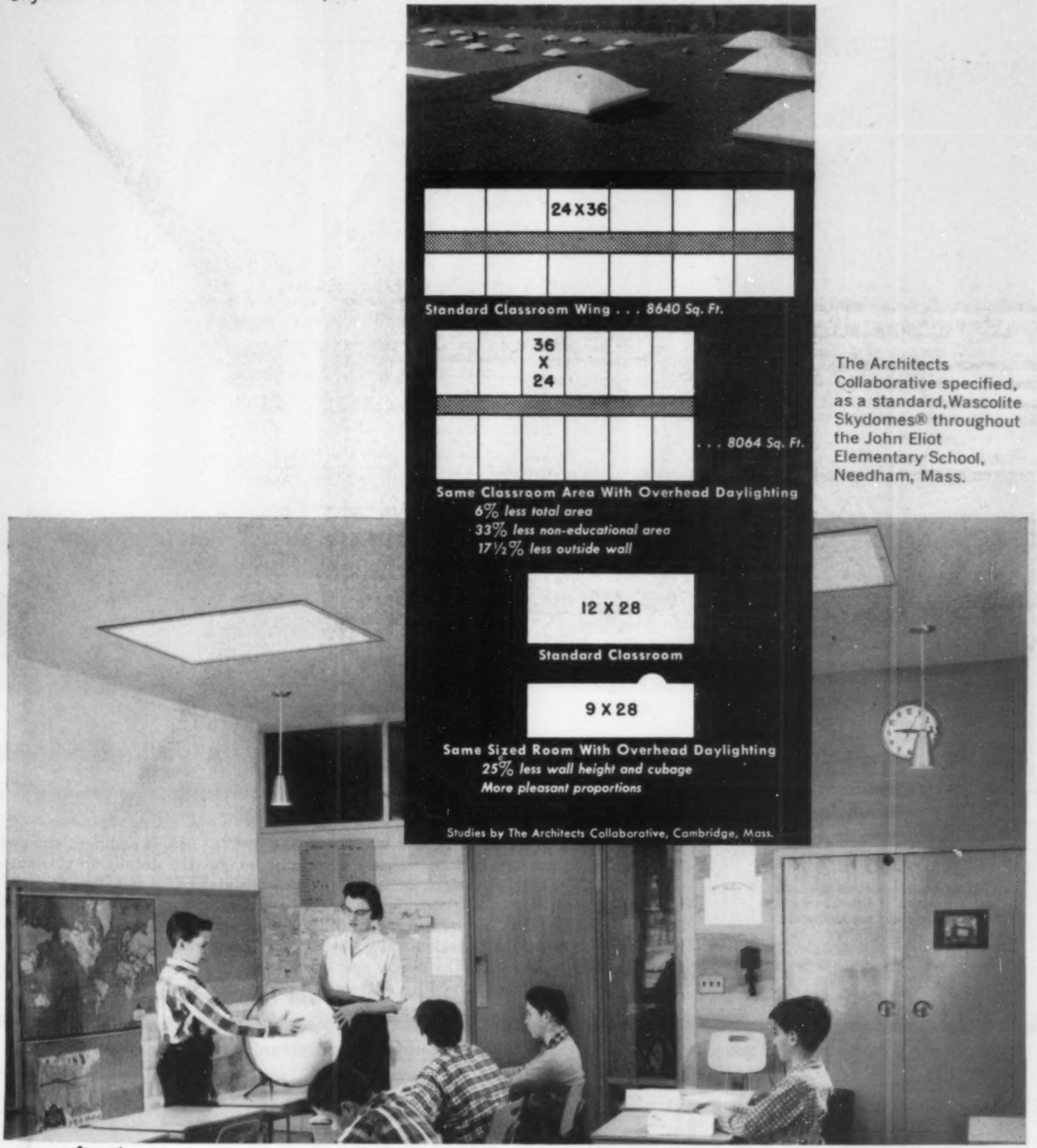

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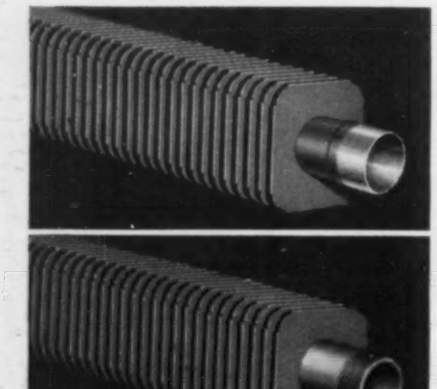
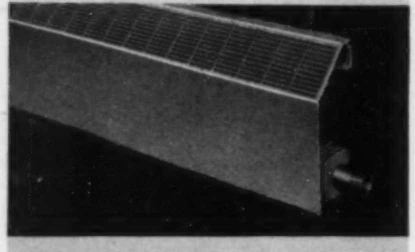
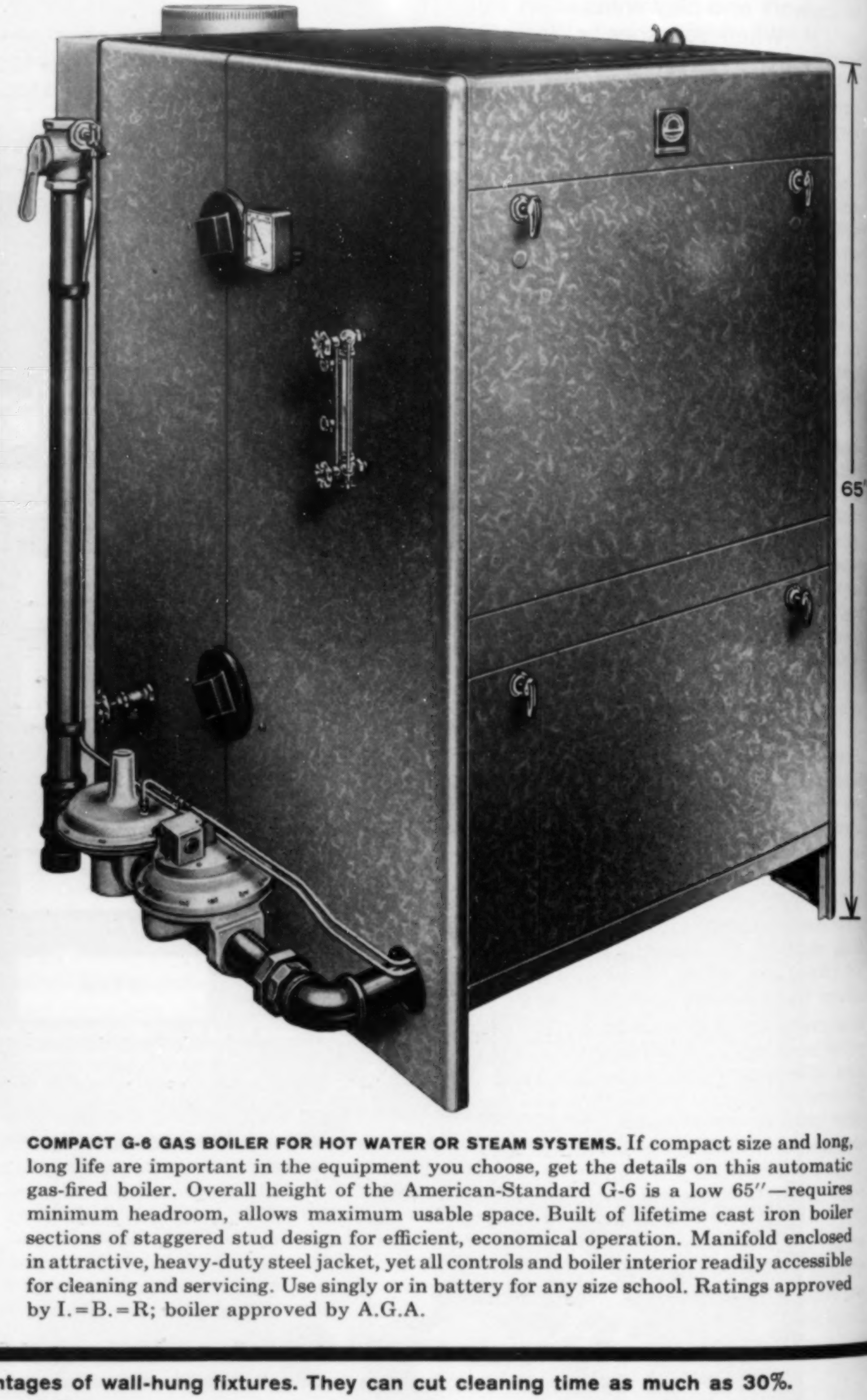


Temtrim Finned Tube Radiation for hot water or steam systems, furnished with economical copper-aluminum element (top) or top-quality pressure steel tubing element (bottom). Both extended less than 5'' into room and may be installed one to three tiers high.



Attractive sloping top enclosure (shown) ideal for Temtrim when smart appearance desirable. Utilitarian expanded metal grille or flat top cover also available, or element may be installed exposed.



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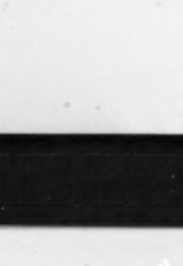
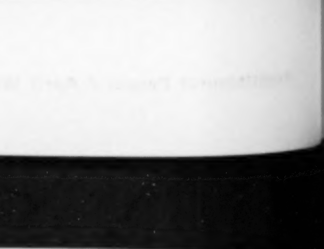


CASAL URINAL

SANISTAND URINAL FOR WOMEN



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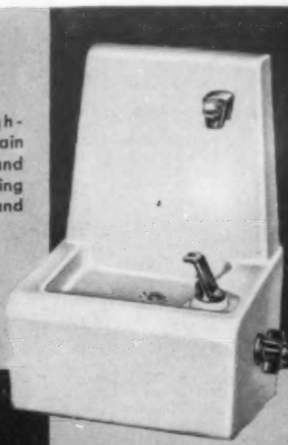

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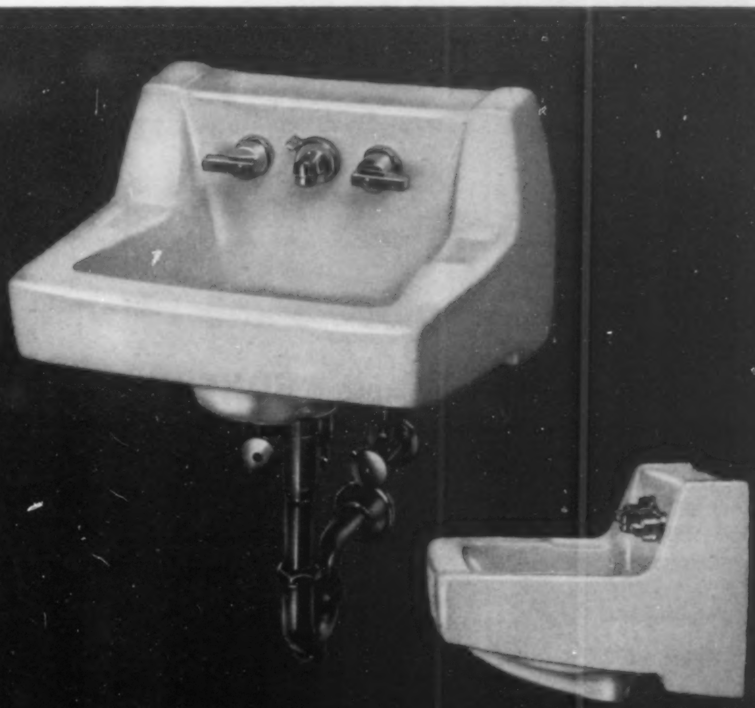

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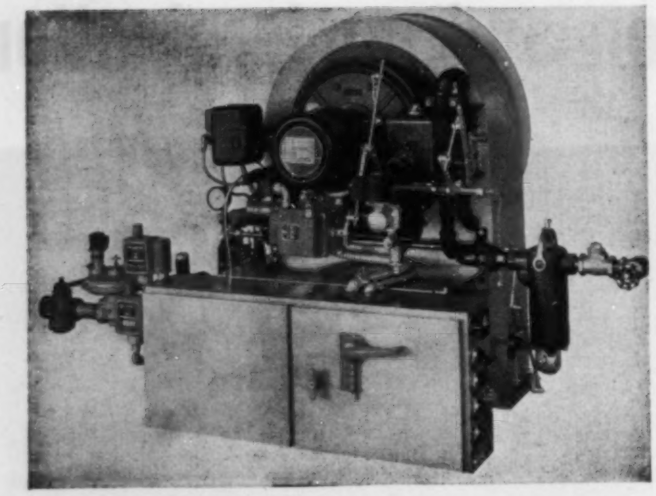

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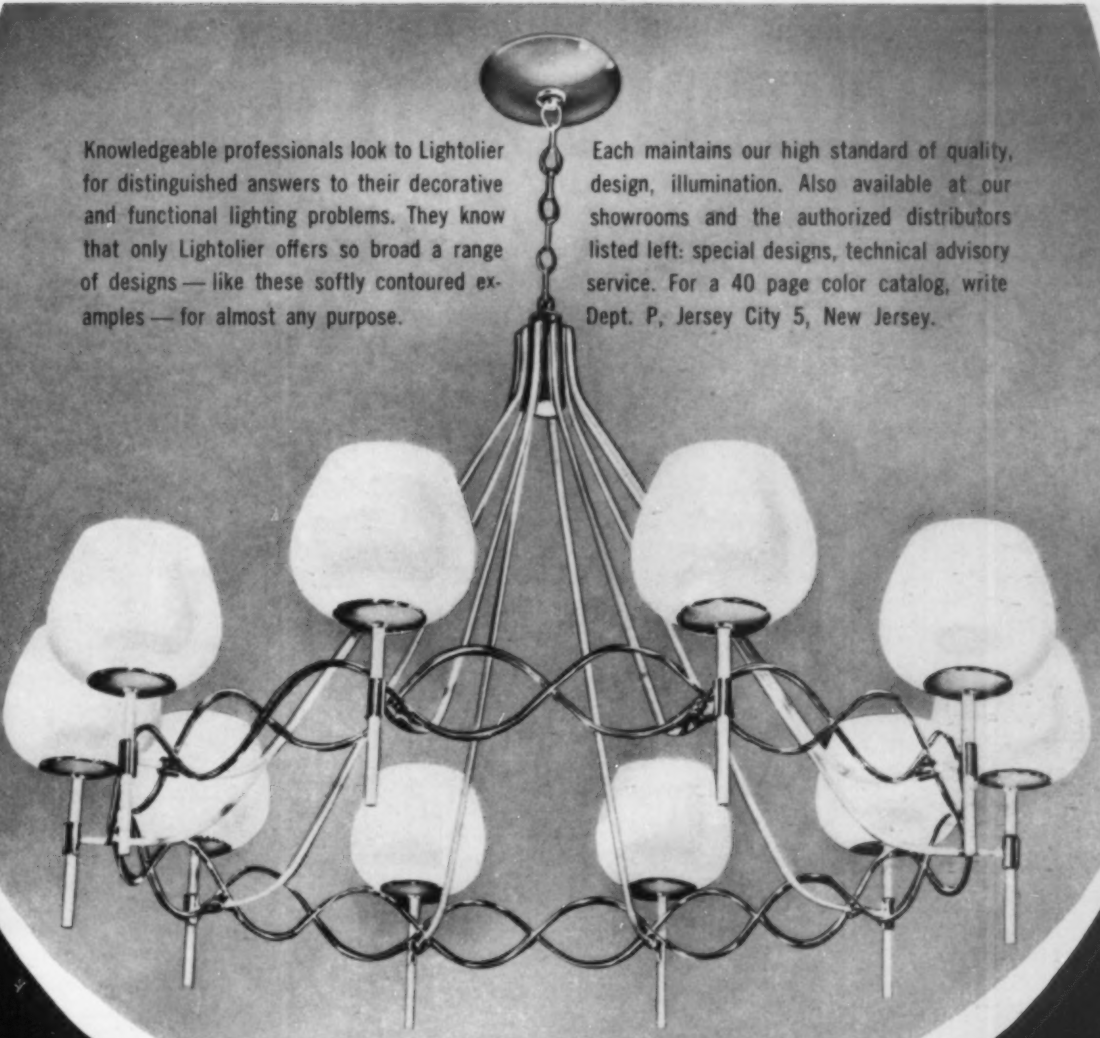

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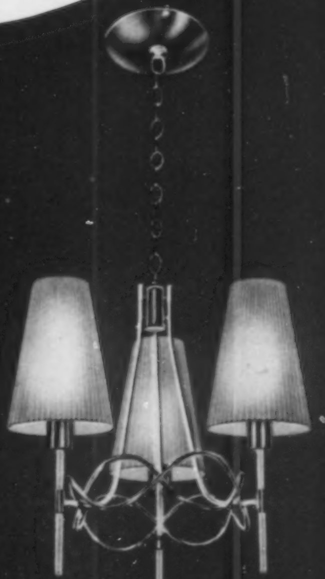

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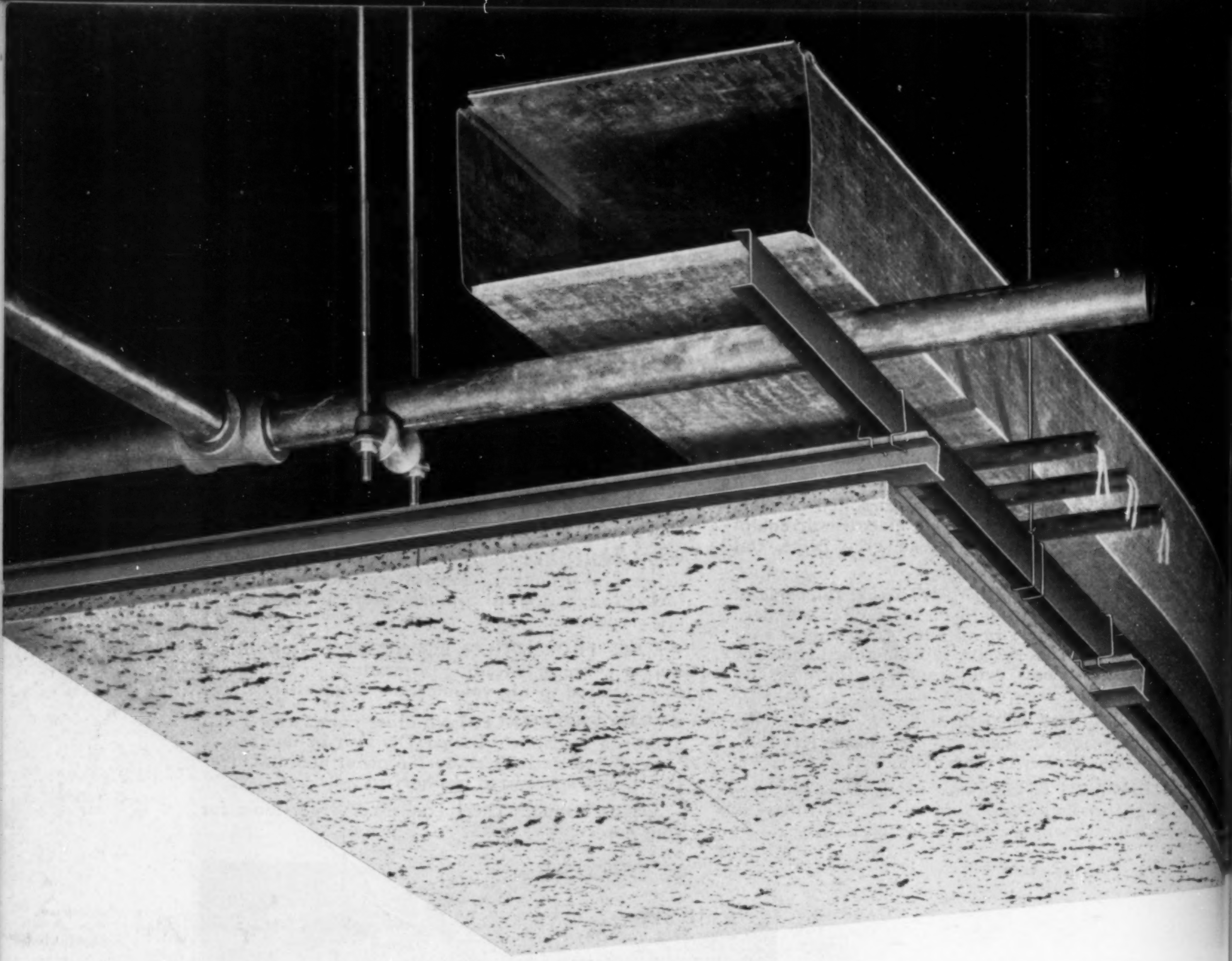

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- sound isolation
- fire protection
- beauty
- comfort
- economy

Pictured above is ACOUSTONE Mineral Acoustical Tile suspended by the U.S.G. Concealed Z-Spline System. This sound control system is one of several specially designed to accommodate lighting fixtures, air-conditioning and heating ducts and outlets, piping and wiring for other above-the-ceiling facilities. Such systems provide the simplicity of design that permits easy access, quick adjustments and repairs . . . the durability to resist normal building stresses.

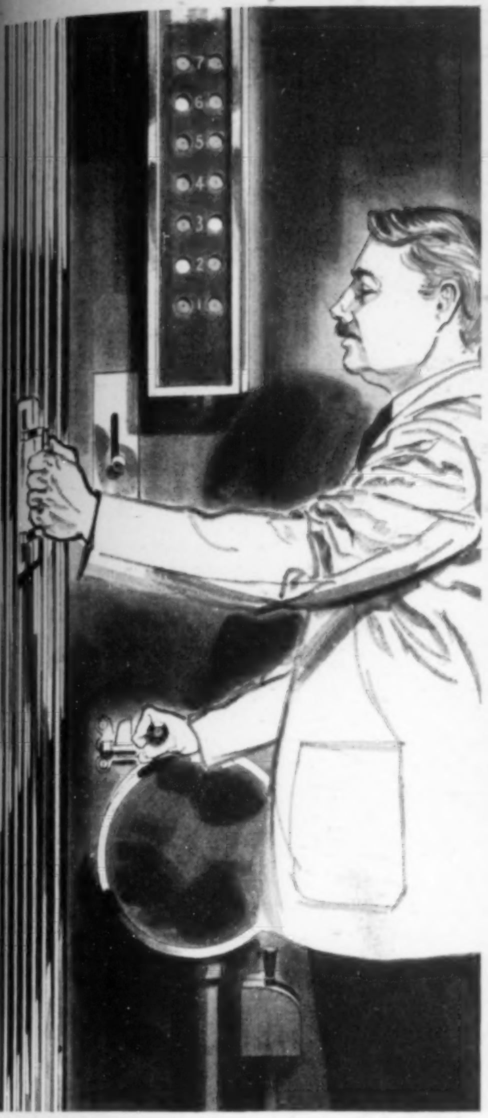
For full information, or a free showing of the 16mm color and sound film, "More than Meets the Eye," contact your nearby ACOUSTONE Tile Contractor or write Dept. AF-81, 300 West Adams Street, Chicago 6, Illinois. Additional information in Sweet's Catalog, Section 11a/Uni.

SOUND CONTROL IS A JOB FOR EXPERTS

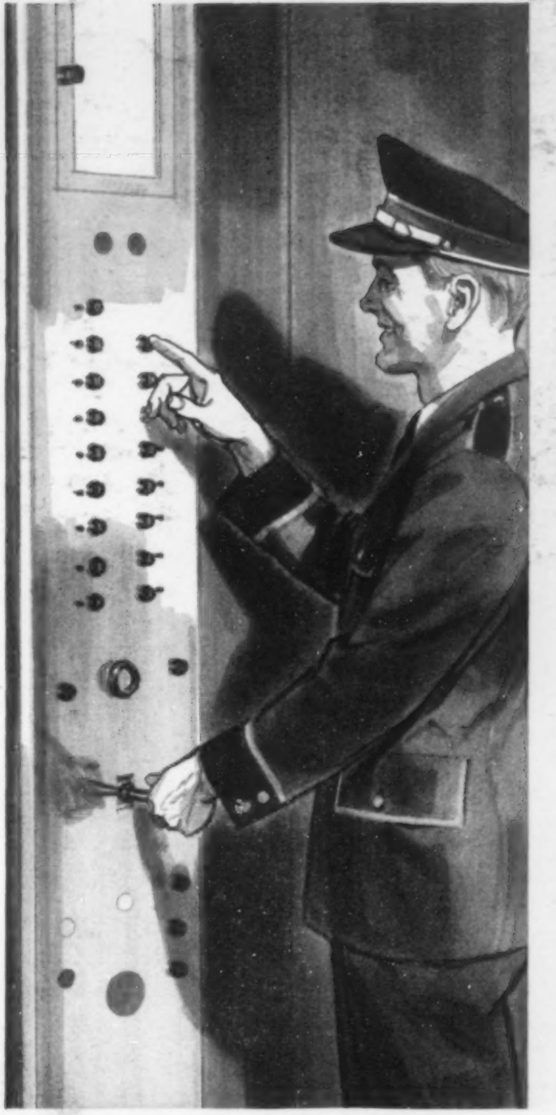
ACOUSTONE*

UNITED STATES GYPSUM the greatest name in building

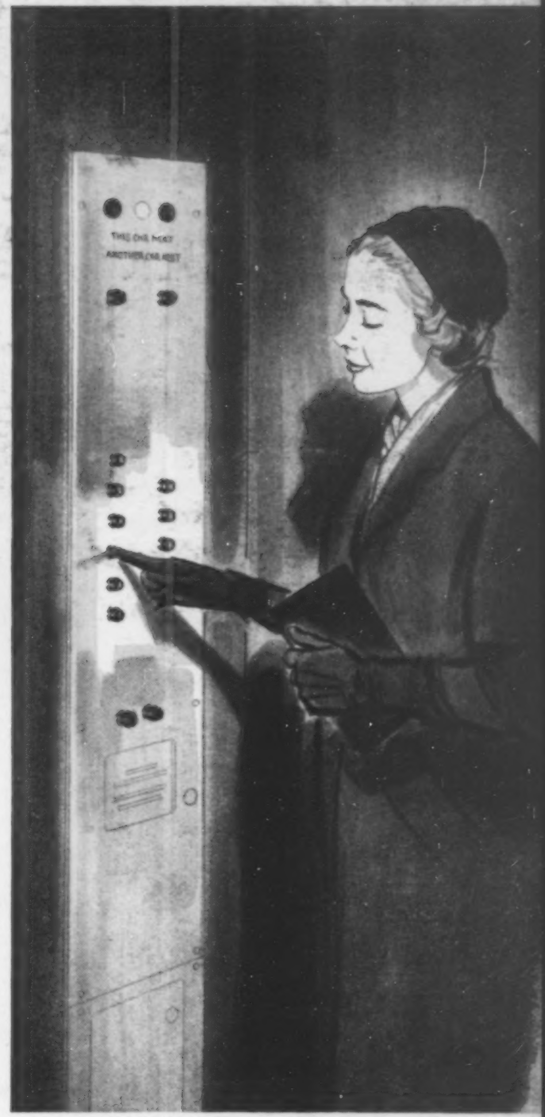
*T. M. Reg. U. S. Pat. Off. for Mineral Acoustical Tile



IN 1922—elevators in The Travelers home office were manually operated by means of a car switch inside the elevator. The elevator doors were opened and closed manually. The accuracy of leveling at the floors depended upon the skill of the attendant.



IN 1946—modernized Westinghouse Elevators were automatically operated from push-buttons in the car. Attendants were still required, however, to press the floor buttons and to initiate the closing of the power operated elevator doors.



IN 1958—The Travelers will have an entirely automatic elevator system, *without attendants.* The passengers themselves will press their floor buttons in the car and the doors will operate automatically without human supervision. Service rendered will be more efficient, faster—and even safer.

Westinghouse and THE TRAVELERS

A proud association of 36 years

The Travelers Insurance Companies home office group of buildings in Hartford, Connecticut, where you can test ride the new Westinghouse Operatorless Elevators with courteous Traffic Sentinel® Controlled Doors.

The long association of The Travelers Insurance Companies and Westinghouse Elevator Division is one of which we are justly proud. Thirty-six years ago, the first 10 of 24 elevators of Westinghouse and acquired companies manufacture were installed in this famous Hartford, Connecticut, landmark.

In 1946, all 24 elevators were modernized by Westinghouse with the latest elevator equipment of that particular time—Signal Control.

Now in 1958, Westinghouse is again modernizing these elevators by installing a completely *operatorless* system with Selectomatic—Automatic Control, Automatic Traffic Pattern and Traffic Sentinel controlled doors. In addition to this current modernization contract, The Travelers has awarded Westinghouse still another contract for maintenance of this equipment. To assure maximum efficiency during this change-over period, when some of the cars will be taken out of service, the Westinghouse Protective Maintenance contract has been made effective immediately.

When completed, this group of buildings will have the most advanced type of elevator operation—comparable in every way to any being installed in the newest monumental buildings.

This confidence by The Travelers in Westinghouse has been made possible by continued progress in research and development, highest quality standards and dedicated service. Our customers are as proud of their equipment as we who designed, manufactured and installed it.

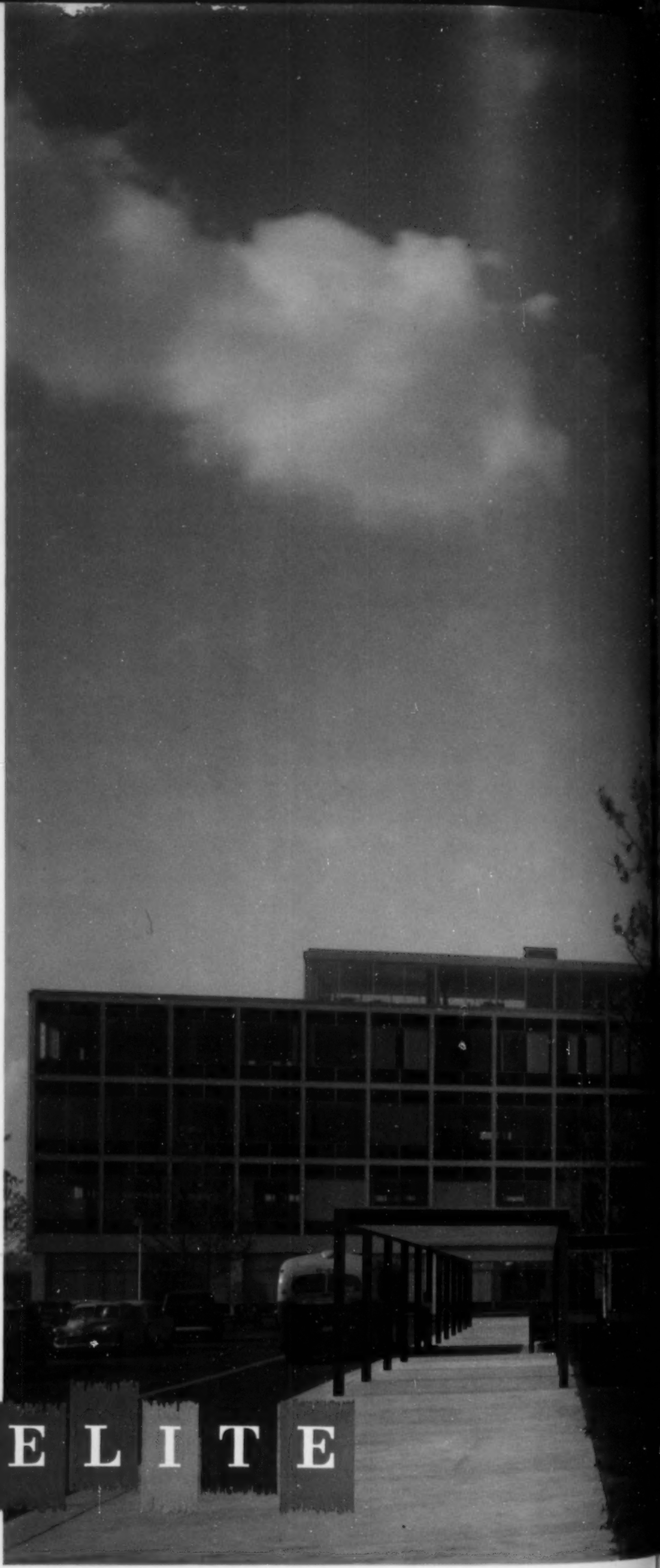
For details on modernizing existing elevators—or installing elevators in new buildings—contact the Westinghouse Elevator Division representative nearest you.

YOU CAN BE SURE...IF IT'S

Westinghouse

J-98757AA

WESTINGHOUSE ELEVATORS AND ELECTRIC STAIRWAYS



Connecticut General Life Insurance Company Building features

glass-clad construction in color

In designing this impressive office building of the Connecticut General Life Insurance Company in suburban Hartford, Connecticut, full use was made of Pittsburgh Glass as a basic architectural material. One of the featured glasses was Spandrelite® . . . beautiful *glass in color*. This building is one of the largest Spandrelite installations completed to date.

Spandrelite gives the architect new latitude in design. It is the answer to the insistent demand for a quality glass product specifically designed for the curtain-wall spandrel. In Spandrelite, a galaxy of colors has been added to the timeless properties of glass. Moreover, this structural material has *strength*, *durability*, *weather* and *corrosion resistance*. And it is installed and maintained just like ordinary glass.

A heat-strengthened glass, with ceramic color fused to the back, Spandrelite is available to architects in two finishes: *twill* and *polished*. Eighteen standard colors—and a wide range of custom colors—make Spandrelite adaptable to any design.

For assistance on problems of curtain-wall construction, without obligation to you, consult our Architectural Representative near you. Meanwhile, fill in and return the coupon for our free full-color book, illustrating and describing the application of Spandrelite to all kinds of structures.

SPANDRELITE

glass in color

75th ANNIVERSARY 1883—1958

SYMBOL OF SERVICE FOR SEVENTY-FIVE YEARS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

Other Pittsburgh Glass products used in this building: Solex® • Twindow® • Rough Plate Glass • Heavy Plate Glass
Herculite® • Pittcomatic® • Paints • PC Foamglas® • Copper-Backed Mirrors

Home Office Building, Connecticut General Life Insurance Company, Hartford, Connecticut • Architects: Skidmore, Owings & Merrill, New York City • General Contractor: Turner Construction Co., New York City

PITTSBURGH
Glass-clad

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Without obligation, please send me a copy of your full-color book entitled "Pittsburgh **Glass-Clad** Buildings."

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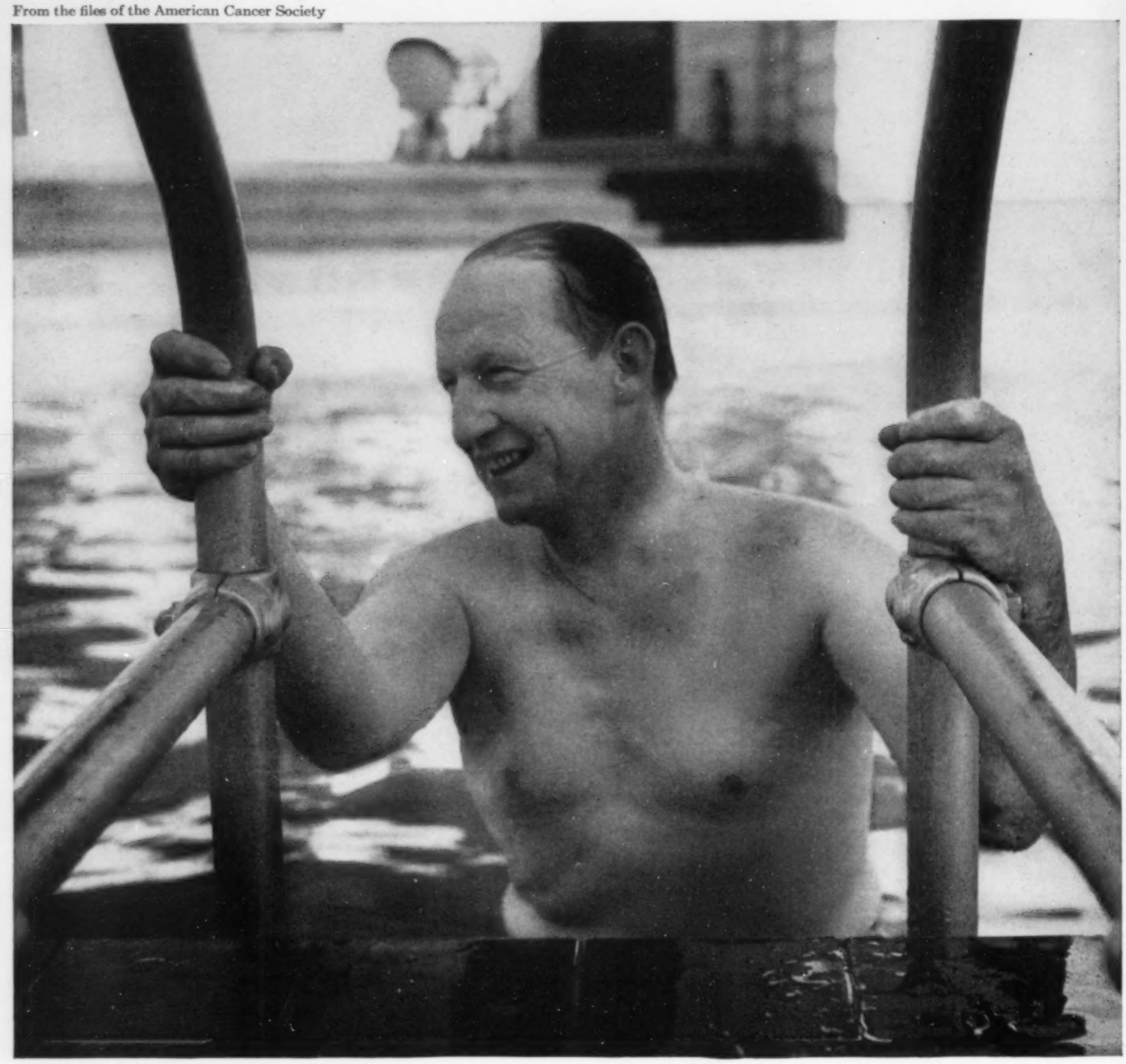


From the files of the American Cancer Society

Yes! I had cancer

"Many people believe that cancer is incurable. They're wrong and I can prove it! And there are 800,000 other Americans like me.

"On a gray morning in November, 1942, a specialist confirmed the diagnosis of cancer made by my family doctor. What he had to say reassured me.

"He explained that, thanks to my habit of having yearly checkups, my doctor had caught the cancer in its early stage. It was localized and operable . . . and here I am, hale and hearty."

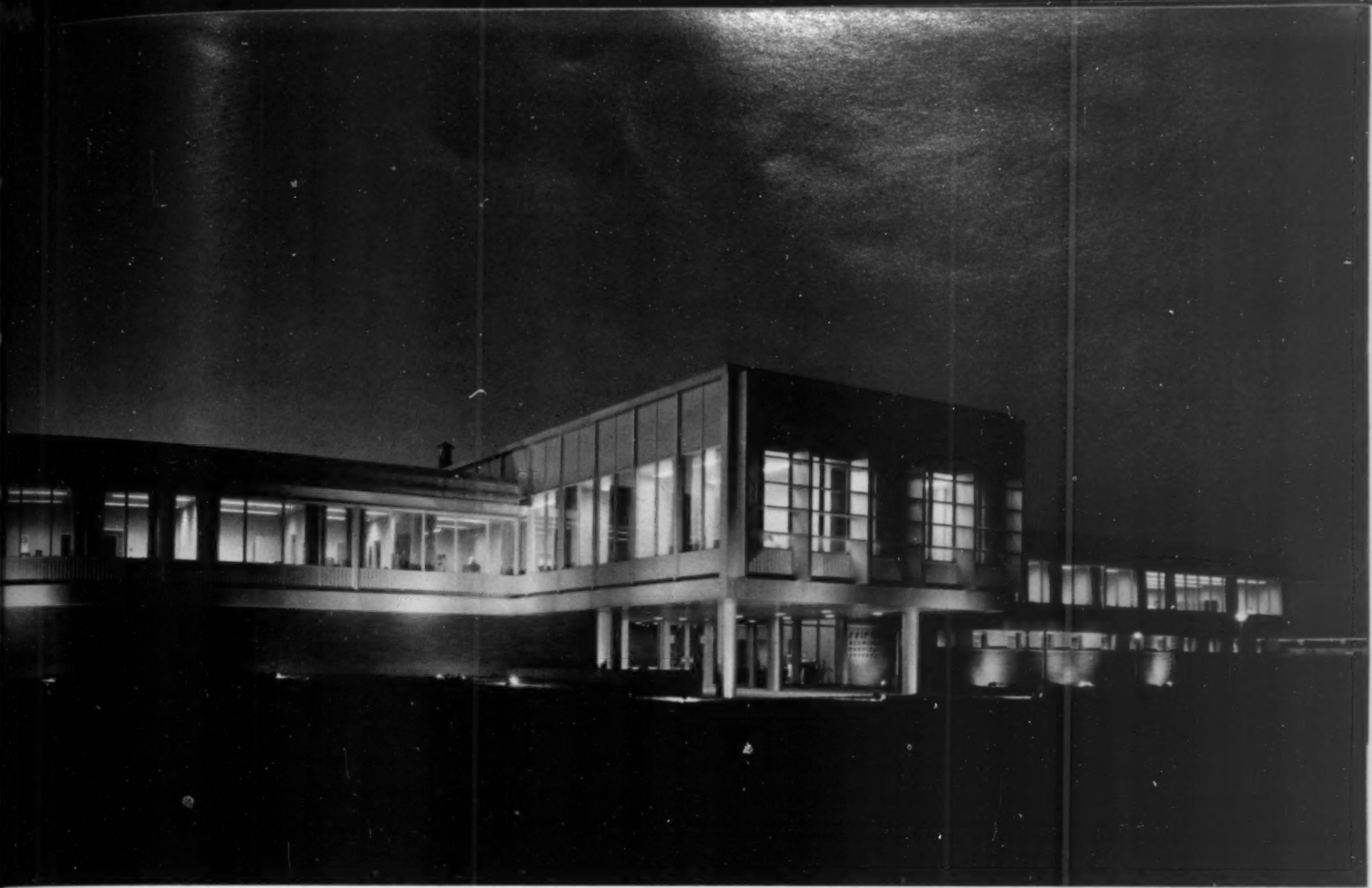
That was 15 years ago, when only 1 out of 4 persons with cancer was being cured. Today, thanks to improved methods of treatment, and earlier diagnosis, 1 person in 3 is being saved.

And with present knowledge, it can be 1 in 2, if everyone observes two simple precautions: Have a health checkup annually. Keep alert for cancer's seven danger signals.

Progress in the American Cancer Society's fight against cancer depends on the dollars donated for its broad, nation-wide program of research, education and service to the stricken.

Help save more and more lives from cancer. Fight Cancer with a Checkup and a Check. Send a check *now* to "Cancer," care of your local post office.

AMERICAN
CANCER
SOCIETY



This is the administration building with its aluminum panel walls and 367 **Thermopane** windows. The units have an outer pane of Heat Absorbing Plate Glass. Below is a view of the lobby reception room.

Revolution in Ravenswood

An on-the-spot L·O·F report on Kaiser Aluminum & Chemical Company's giant plant in Ravenswood, West Virginia

Here at the mouth of Sandy Creek, on land once owned by Revolutionary General George Washington, you can see in action the latest phase of another revolution. The new industrial revolution that is changing the face of America.

In this little town of Ravenswood, the population is leaping from the 1,200 who lived here in 1953, to an estimated 18,000 by 1960. Acre after acre of new homes will spring up, all backed by individual capital. New banks, barbershops, bowling alleys, schools, restaurants. Because seven miles from town, on a 3,200-acre site, hums a giant new $200,000,000 plant—one of the largest integrated aluminum plants in the world.

This sprawling, shining giant, with its strikingly beautiful glass and aluminum administration building, draws job applicants like a light draws moths—60,000 hopefuls for 5,000 jobs. And there is such a parade of sight-seers on Sundays that the company put in picnic grounds beside the main drive.

We went to Ravenswood to get the whole story from the people who are a part of it. Here it is, in their own words:

LOF
GLASS

L. A. Amos—*Works Manager* "We had more than manufacturing in mind when we planned this plant. We wanted, of course, modern and efficient facilities. But we also wanted a plant which would make the townspeople proud. Buildings so beautiful they would set a standard for the city that would soon grow around them.

"This administration building, for example, is 34,000 square feet of comfort and beauty and freedom from maintenance. These walls are insulated aluminum panels. And those big windows are double-paned with the outside pane made of heat absorbing glass.

"How do the employes like it? Bob Button, is the best one to answer that."

Robert Button—*Works Controller and Administrative Superintendent:* "I think almost all of my people are happier here than anywhere else they've ever worked. This building is wonderful in the winter, the insulated aluminum panels and *Thermopane* insulating glass keep the temperature warm and balanced all winter. (Balance is tough to get because conditions change so fast—they say around here that if you don't like the weather, just wait 15 minutes.) Our girls' desks are right next to the windows because our staff is growing so fast—but they seem to be comfortable even when it's really cold outside. And in the summer (it gets up to around 100° outside) the aluminum exterior and the heat absorbing glass in *Thermopane* helps keep the building cool. Seems to help the air conditioning. At least it's more comfortable than any *I've* experienced before.

"Perhaps you'd like to talk firsthand to one of the girls":

LOF
GLASS

This is the office of Works Manager L. A. Amos. Ceilings: Aluminum acoustical pans. Walls: Insulated aluminum panels. Windows: **Thermopane** with Heat Absorbing Plate Glass.

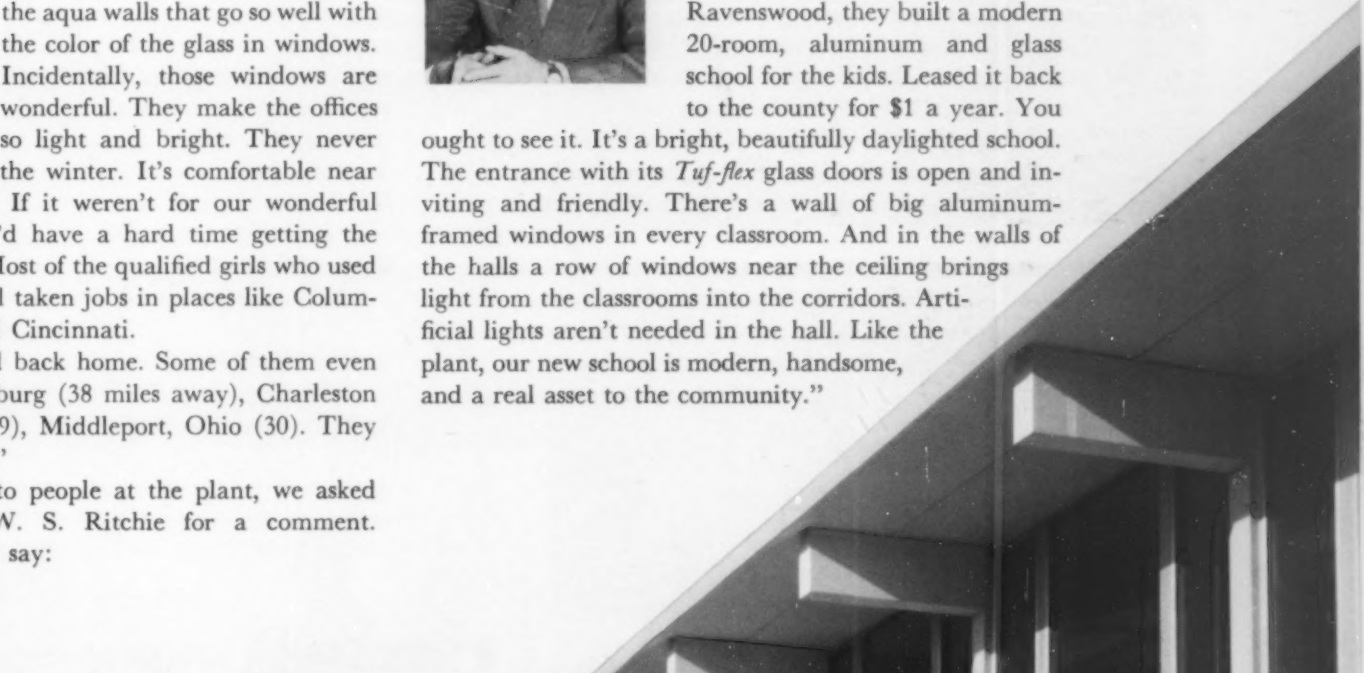
Notice how close the desks are to the windows in this general office. **Thermopane** keeps it comfortable even on coldest days. There are 8,800 square feet of **Thermopane** insulating glass in this administration building.

Mrs. June Curry—*Secretary:* "I think we have the best working conditions in the valley. We like everything about our beautiful building. We like the drapes that match the aluminum panels, and the aqua walls that go so well with the color of the glass in windows. Incidentally, those windows are wonderful. They make the offices so light and bright. They never fog up or feel cold in the winter. It's comfortable near them *all* year around. If it weren't for our wonderful working conditions we'd have a hard time getting the kind of girls we have. Most of the qualified girls who used to live around here had taken jobs in places like Columbus and Cleveland and Cincinnati.

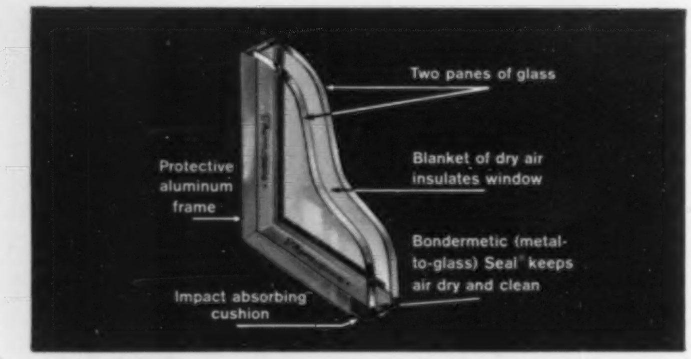
"Now they've moved back home. Some of them even commute from Parkersburg (38 miles away), Charleston (51), Point Pleasant (29), Middleport, Ohio (30). They *must* like to work here."

Note: After talking to people at the plant, we asked Ravenswood Mayor W. S. Ritchie for a comment. Here's what he had to say:

W. S. Ritchie—*Mayor of Ravenswood:* "They didn't tell you, but Kaiser not only contributed some $100,000 for the community planning consultants who drew up a plan to guide the growth of Ravenswood, they built a modern 20-room, aluminum and glass school for the kids. Leased it back to the county for $1 a year. You ought to see it. It's a bright, beautifully daylighted school. The entrance with its *Tuf-flex* glass doors is open and inviting and friendly. There's a wall of big aluminum-framed windows in every classroom. And in the walls of the halls a row of windows near the ceiling brings light from the classrooms into the corridors. Artificial lights aren't needed in the hall. Like the plant, our new school is modern, handsome, and a real asset to the community."

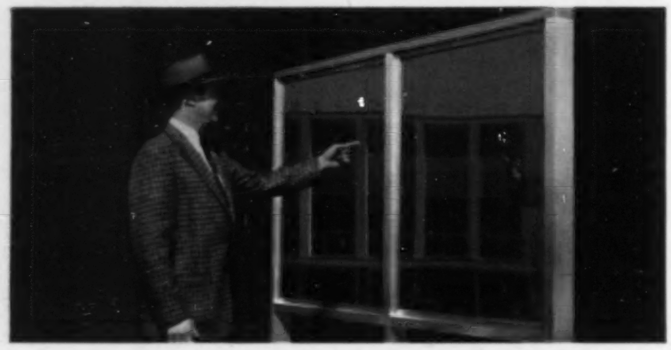


This is a small section of the new 20-room school designed by architects Perkins and Will, Chicago, and leased to the community by Kaiser. Windows are L·O·F Daylight Walls. Entrance is L·O·F **Tuf-flex** Glass Doors.


Two panes of glass
Blanket of dry air insulates window
Protective aluminum frame
Bondermetic (metal-to-glass) Seal keeps air dry and clean
Impact absorbing cushion

THERMOPANE®

For maximum comfort and for heating and air-conditioning economy use *Thermopane* insulating glass in windows. Heat loss is cut almost in half compared to single glazing. Drafts near windows are reduced. Outside noises are muffled. *Thermopane* is available in two new improved types: *Thermopane* with metal-to-glass *Bondermetic Seal®* and enclosed in an edge-protecting aluminum frame; and *GlasSeal® Thermopane*, an all-glass insulating unit that is ideal for pre-glazed sash.



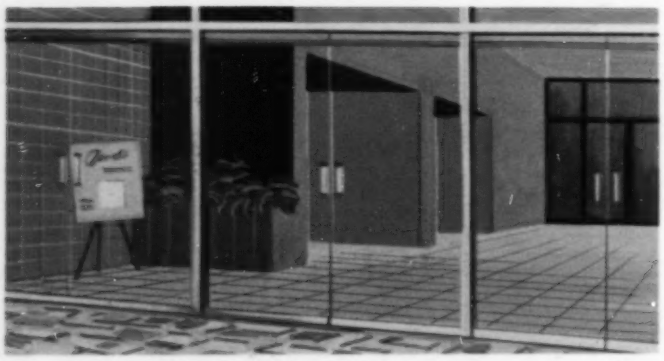
PARALLEL-O-PLATE®

To keep distorted reflections from spoiling the appearance of your building, use *Parallel-O-Plate* Glass in the windows. It is *twin-ground* for more freedom from distortion. The glass in the two demonstration windows shown here is backed with black composition board to simulate the mirror effect of windows in a building. In the window at the left, glazed with *Parallel-O-Plate*, the reflection is mirror-perfect. In the other, glazed with sheet glass, note the distorted reflection.

HEAT ABSORBING PLATE

For the comfort of those who must work near windows . . . for reducing the initial cost of air-conditioning equipment and its operating cost . . . L·O·F makes two kinds of ¼″-thick polished plate glass: Heat Absorbing and *Parallel-O-Grey*. L·O·F Heat Absorbing Plate Glass has a pleasing blue-green color. *Parallel-O-Grey* has a neutral grey tone that does not change the color of objects seen through it. Both offer relief from sun glare, *Parallel-O-Grey* to a greater degree. Comparison of solar heat transmission is as follows:

¼″ REGULAR PLATE GLASS	. . . 79.9%
¼″ HEAT ABSORBING PLATE	. . . 46.3%
¼″ PARALLEL-O-GREY	. . . 45%



TUF-FLEX® DOORS

These frameless, clear-glass doors *invite* visitors into a building. And they can withstand, with virtually no maintenance, all of the traffic they help create. Made of ½″-thick or ¾″-thick tempered plate glass, they are 3 to 5 times tougher than regular plate glass of the same thickness. There are 16 types in finished sizes up to 48″ in width and 108″ in height. *Tuf-flex* Doors are furnished complete with cast bronze or alumilited aluminum fittings which are designed to take standard pivot hinges and builders' hardware.

• For complete information on any of these L·O·F products, call your L·O·F Distributor or Dealer (listed under "Glass" in the yellow pages). Or write to Libbey·Owens·Ford Glass Company, 608 Madison Ave., Toledo 3, Ohio.

AP-801

LOF
GLASS

LIBBEY·OWENS·FORD

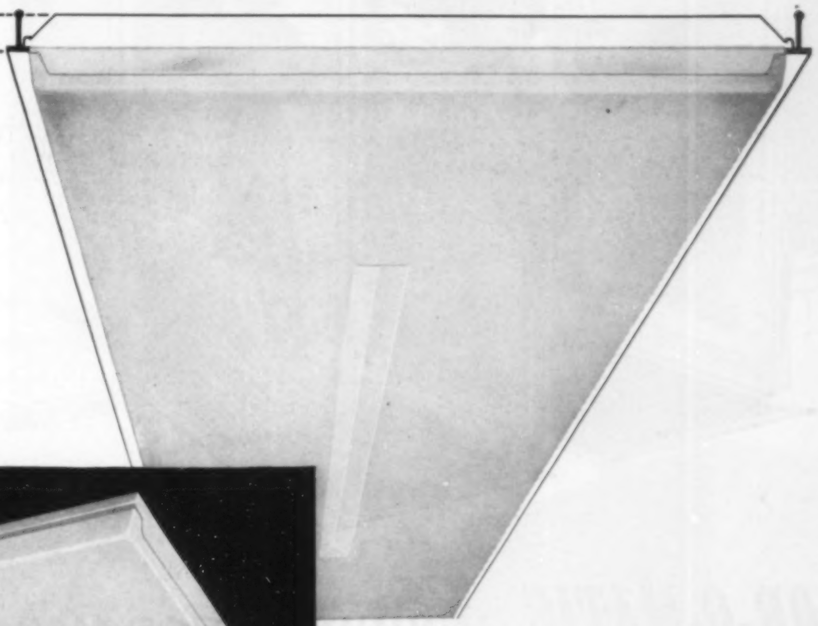
A GREAT NAME IN
Glass

TOLEDO 3, OHIO

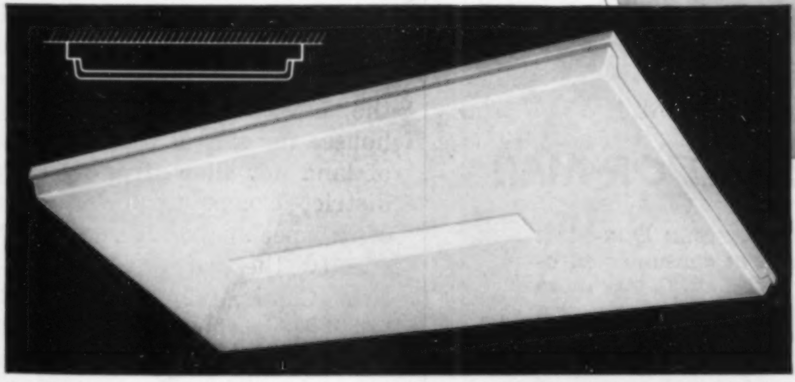
Now . . . a troffer so shallow it handles like tile!

SMITHCRAFT SLENDEX

Introducing the slender, sleek Smithcraft SLENDEX. A unique, practical answer to the absolute *minimum cavity – low ceiling* conditions dictated so often by today's construction economies. Recesses only 1⅜" . . . less than the depth of most ceiling supporting members . . . eliminates cost of cutting these members. One-man installation. Goes in FLAT, requires no extra depth for tilting. Adapts to most of today's common ceilings. 1′ x 4′ units for 2 Rapid-Start Lamps or 2′ x 4′ units for 4 Rapid-Start Lamps. Here is a clean, smoothly-styled lighting answer to a common contemporary building problem . . . simple, efficient and pleasing!



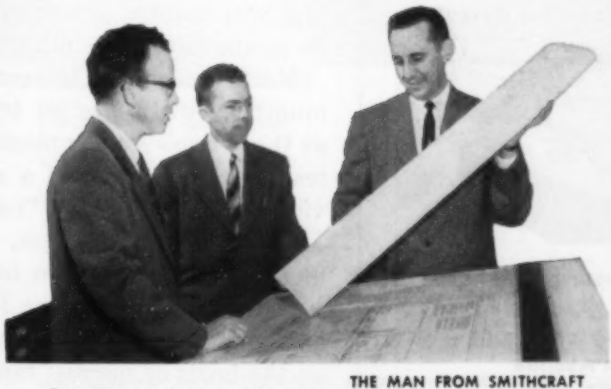
SURFACE



Smithcraft — "AMERICA'S FINEST FLUORESCENT LIGHTING"

SLENDEX *Surface Units are shallow, too. Slim, trim and clean, with no light leaks, and with no dark center streak. Fixture depth 1⅜" — overall depth, including shielding, only 3".*

Smithcraft LIGHTING
CHELSEA 50, MASS.



THE MAN FROM SMITHCRAFT
Paul Wehner, Dayton, Ohio representative. Like every member of Smithcraft's nationwide organization he can help you turn any lighting purchase into a profitable lighting investment. Ask the man from Smithcraft about the new SLENDEX.

PLEASE ATTACH TO YOUR BUSINESS LETTERHEAD and mail to AF-4
Smithcraft LIGHTING, CHELSEA 50, MASS.

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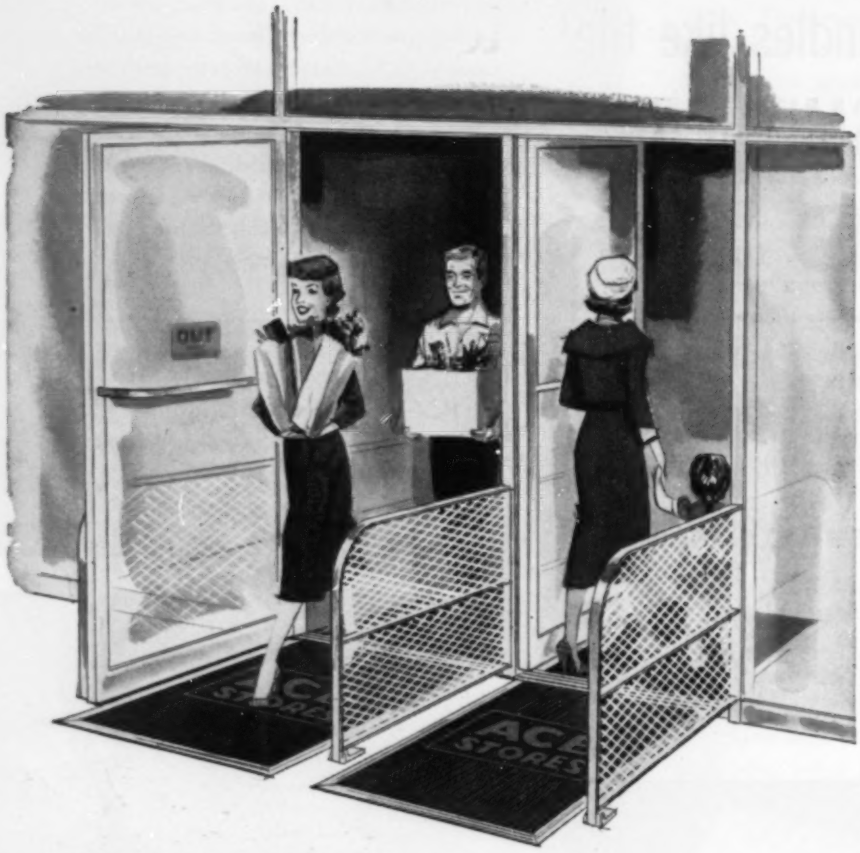
TITLE____________CO.____________

ADDRESS____________CITY________STATE______

- ☐ Please send me the monthly publication, "Light Side of the News", so that I can keep in touch with the latest trends in lighting.
- ☐ Please send me catalog information on the NEW Smithcraft SLENDEX.
- ☐ Please send me the complete SMITHCRAFT CATALOG, containing data on America's Finest Fluorescent Equipment.

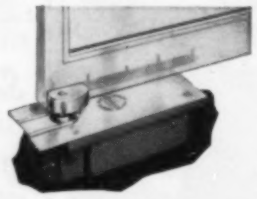
Store Door
AUTOMATION
Builds Traffic



DOR-O-MATIC® INVISIBLE DOR-MAN

Merchants who have the Dor-O-Matic Invisible Dor-Man working for them are reaping the advantages of consumer automation—customers move in and out faster, oftener . . . buy more . . . because the convenience of automatic doors puts them in a buying mood . . . creates a more pleasant relationship. No temper-trying door jam-ups. Complete safety is assured. Storeowners have dependable door operation . . . plus the added eye-appeal of bright, decorator, colored carpets . . . monogrammed for immediate store identification. Dor-O-Matic's superior design and rugged construction gives unparalleled service. Write for detailed information.

Dor-O-Matic Concealed in the Floor
Manual Door Controls
—available in 31 different models
to fit all types of doors . . .
every kind of traffic condition.



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EXPORT: Consultants International, Apartado 21397, Mexico 7, D.F., Mexico

EXURBIA *continued from page 97*

living environment that was the purpose of the planning—and the reason for the zoning."

Dennis O'Hara, executive director of the American Society of Planning Officials, has observed a nationwide trend to higher plot standards and, he notes, that increasingly this trend has been supported by the courts. The most important decisions to date are those of the Supreme Courts of Illinois and New Jersey, which upheld 5-acre minimums, and the Supreme Court of Missouri, which has supported a 3-acre limit. However, sustaining court decisions have generally been based on the fact that the zoning under challenge was part of a master plan for land use. Without such a plan and a solid background of expert testimony and research to back it up, acreage zoning would not stand a chance.

The ingenious subterfuge

While acreage zoning is the most common device used to restrain growth, several other devices have been tried. Perhaps the most ingenious was the recently overruled provision of the Sands Point, Long Island zoning ordinance. In an attempt to rule out tract developments, the law defined the building of houses for sale as a commercial use of land not allowed in a residential district except upon the granting of a special permit—which could specify the rate of building. In New Castle, New York, the town tried to ration building permits, thus limiting the number of houses which could be built each year, but the court ruled that the New Castle law was totally arbitrary and had no connection with planning.

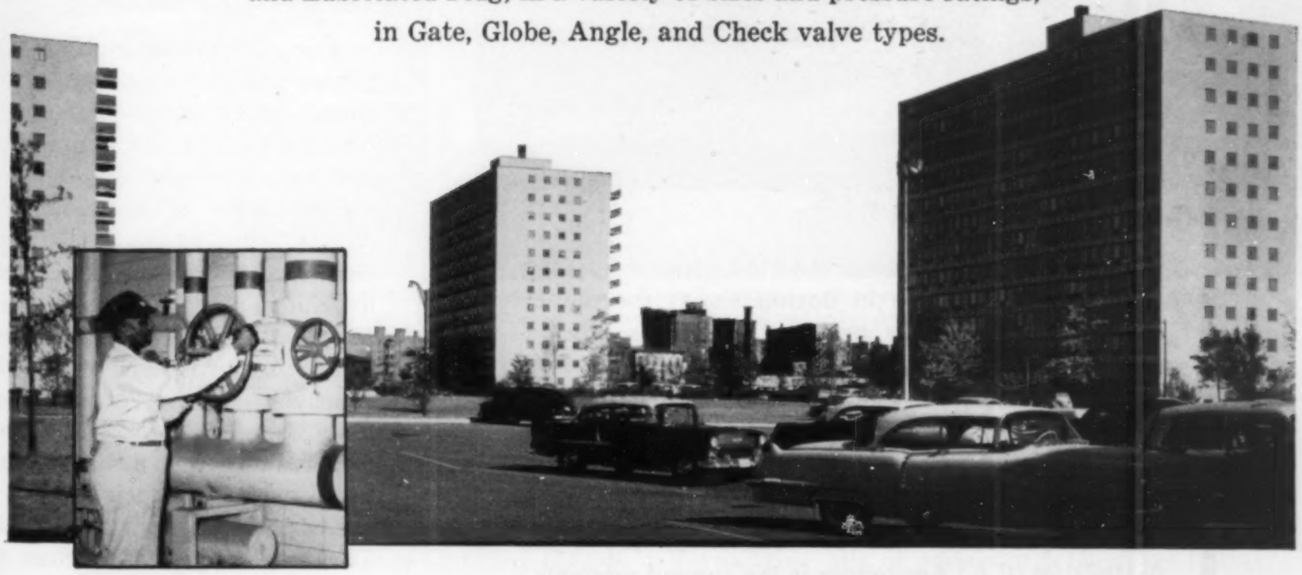
Not all attempts to restrain community growth are so transparent as these two. And in most cases, the test of the legality of a zoning device is whether it is "reasonable." Many zoning ordinances, for example, establish minimum house sizes. Yet only excessive cubic footage requirements, obviously unreasonable on the basis of normal family needs, are likely to be overruled by the courts.

Assuming that acreage zoning

continued on page 180

Carefully selected Walworth valves and fittings serve ultra-modern Lake Meadows development

Chicago's new 100-acre development, to house about 2000 families, makes the facilities of its streamlined shopping center available to additional thousands in the surrounding area. Quality is the keynote throughout the construction of Lake Meadows and literally hundreds of Walworth Valves and Fittings have been specified and installed in the vital plumbing, heating, ventilating and air conditioning systems. Valve requirements have been so broad that almost all of Walworth's complete lines are represented—Steel, Iron, Bronze and Lubricated Plug, in a variety of sizes and pressure ratings, in Gate, Globe, Angle, and Check valve types.



Cabie Maxwell, Stationary Engineer, operating a Walworth Iron Gate Valve on main steam lines to various buildings at Lake Meadows.

OWNER: New York Life Insurance Company
ARCHITECT: Skidmore, Owings & Merrill
BUILDER: Turner Construction Company
CONTRACTOR: Economy Plumbing and Heating Company

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SAFE
OUTSIDE WALKING SURFACES

THE sidewalk around the First Federal Savings and Loan Association in Boston slopes sharply in several directions. To provide walking safety in wet weather and dry, plus appearance in keeping with the colorful new building, they used ALUNDUM Aggregate in latex terrazzo.

For years, teen-agers hurrying to classes in the High School of Commerce (Worcester) have had non-slip protection in wet weather or dry from ALUNDUM (C.F.) Aggregate in the cement sidewalk.

Solid Grain Sidewalk Abrasives. Some architects prefer a sprinkling of loose abrasive grain of the solid type wood-floated into the surface of the cement, though it lacks the high bonding feature of ALUNDUM Aggregate. Available are ALUNDUM (Aluminum Oxide) and CRYSTOLON (Silicon Carbide) grain in a variety of sizes.

NORTON
NON-SLIP FLOORING

NORTON COMPANY
WORCESTER 6, MASS.

ALUNDUM AGGREGATE for Terrazzo and Cement • ALUNDUM STAIR and FLOOR TILE

EXURBIA *continued from page 178*

laws do achieve a measure of control over growth (as indeed many communities have proved), there still remains a serious question as to the wisdom of arbitrary and excessive acreage requirements. A community consisting exclusively of $50,000 houses on 2-acre lots is just as much a one-class, one-age group place as a development of $10,000 houses on 50-foot lots. Is it sociologically—or economically—desirable, over the long pull, for any community to develop such imbalance? Such stratification involves particular difficulties in upper-income exurbian towns. Maids and handymen, for example, are hard to find, particularly if there is no place for them to live nearby. Even more serious is the problem of where teachers, storekeepers, city employees, and the many other people needed to make a community work, are going to live. One Hudson River suburb, for example, proved too expensive as a residence for its city manager, who was forced to commute 15 miles to his job.

The inexorable change

Along the typical commuter's trail to the new, acreage-zoned suburban towns, stand many communities developed to the same upper-middle and upper income standards in an earlier wave of suburban growth during the 1920's. Allowing for the smaller lots of that time the development was strikingly similar. In the twenties, however, the rush to the suburbs was confined to a relatively narrow segment of the population. There was not then the impetus of decay in the city centers; there were few efficient tract builders to put up houses by the hundred. The first ring of suburban towns, consequently, developed more slowly than the exploding suburbs of mid-century. Nevertheless, the problems plaguing these middle-aged towns today presage those which will inevitably confront the towns farther out.

The older suburbs, now facing mounting costs of municipal services and school operation, must replace worn-out capital investments and, in some cases, begin thinking

continued on page 182

TEXTURE, LIGHT AND SOUND CONTROL are provided by "Sylva-Lume" with four panel types. A three-foot square panel gives interchangeable, mixed or matched designs. Double panels reduce maintenance and add color. Sound baffles give more efficient deadening over work areas. Light is evenly distributed by the tough, good-looking panels vacuum formed of BAKELITE Rigid Vinyl Sheet by Piolite Division of Pioneer Plastics Corp., Salem, Mass.

there's nothing like wall-to-wall lighting

. . . as you see it in the Boston offices of the New England Mutual Life Insurance Company. It's new control for light and sound; with a choice of color in four module patterns.

. . . and when Sylvania Electric Products chose the material for their module panels, they picked BAKELITE Rigid Vinyl Sheet. Normally unaffected by moisture, oils, or greases, it is tough yet lightweight, easy to install and maintain.

For your next job, new or modernization, have the facts on hand. Write today, Dept. BT-2, for luminous ceiling data.

It pays to design with BAKELITE BRAND PLASTICS

UNION CARBIDE

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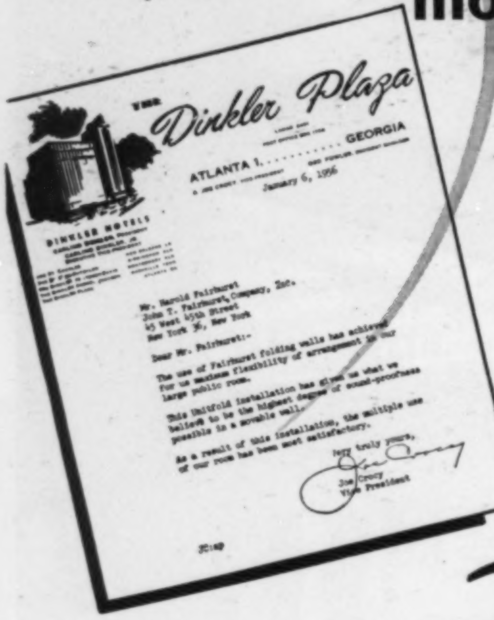
"...highest degree of sound proofness possible in a movable wall"


THE Dinkler Plaza

ATLANTA 1. . . . . GEORGIA

January 6, 1956

Mr. Harold Fairhurst
John T. Fairhurst Company, Inc.
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New York 36, New York

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JC:ap

— from a letter by A. Joe Crocy, Vice-President, The DINKLER-PLAZA, Atlanta. Alexander & Rothschild, Arch.

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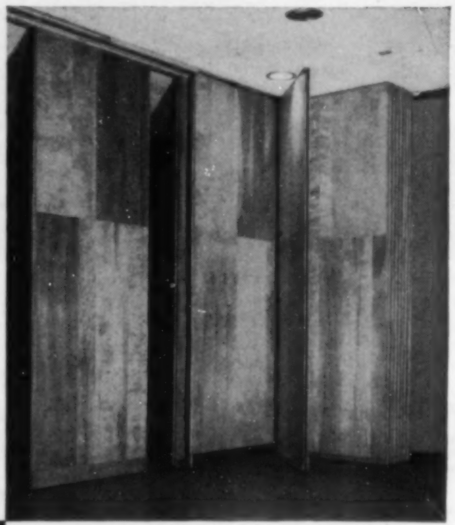

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EXURBIA *continued from page 180*

about urban renewal. At the same time, their residential tax valuations are not high enough to foot the bill. Consequently, many of the old suburbs are seeking commercial development, certain kinds of industry, even garden apartment projects to help carry the load. Fortunately, these communities are, for the most part, either divided into small lots or large estate tracts. The remaining estates offer large enough sites for the new research laboratories, offices, or shopping areas the towns need, and the tighter density areas provide markets and labor sources for these new nonresidential developments.

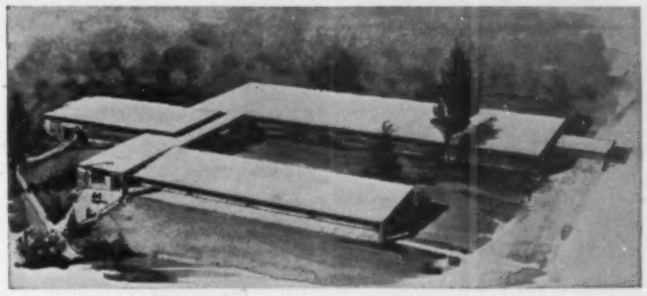
No such alternative is likely to greet the aging suburb farther out. Even now, farms are largely gone, and estates are selling out fast. These large tracts are being committed to acre-lot colonies or to tax-exempt educational and religious institutions. Both are relatively permanent. Thus committed, the new towns stand in danger of ending up as perpetual and declining exurbias of 1- and 2-acre plots.

The oblique attack

Yet zoning, as part of a well-thought-out master plan, despite its limitations, is still the best method available for controlling suburban growth. Except for a seldom-used provision in the enabling powers of the state of Washington, there is no authority which grants a municipality or township government (both, effectively *creatures* of the state and beholden to it for their powers) the right to control suburban growth directly. The Washington law could be used, in the opinion of some planners, by a community that wanted to prescribe not only how much building could take place, but where the building could be done. But actually, the law would probably be repealed if too many communities tried to use it.

There are, furthermore, few examples in the U.S. for the kind of control established in Britain under the Town and Country Planning Act of 1947. There, the local government can control the development rights of land. The only other foreseeable

continued on page 184



Devine Elementary School, Devine, Texas
Architect: Adams & Adams, A.I.A., San Antonio, Texas
General Contractor: William Matera, San Antonio, Texas

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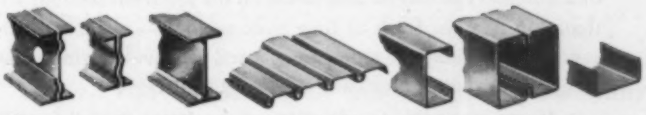

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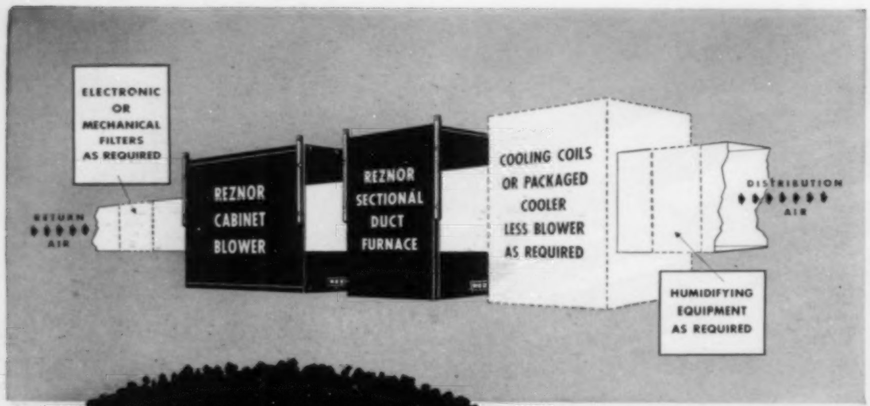
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EXURBIA *continued from page 182*

alternative is actual municipal land ownership, such as has enabled the smooth growth of urban areas in Holland and Scandinavia. One town in the U.S., Mountain Lakes, New Jersey, did acquire most of its undeveloped land by tax lien and the community is now selling off the land in controlled amounts each year. But this is an exceptional case with unusual conditions. Actually, all of these alternative methods of controlling community growth would have to overcome the inherent American instinct toward private ownership of land before they could effectively be employed.

There are, however, several refinements being applied to acreage zoning controls which hold promise of achieving development control without the undesirable aspects of arbitrary, over-all acreage-lot restriction. The most advanced refinement is written into the zoning ordinances of Clarkstown and Orangetown (whose zoning map is shown on page 94) in fast growing Rockland County, New York. Prepared for these towns by Planner Richard May Jr. in his capacity as director of the Rockland County Planning Board, both of the ordinances separate residential land into three categories. The first category is land in previously developed sections of the village for which a minimum lot size of 15,000 square feet is set. The second and third categories provide for minimum acreage lots. The second category, however, is land with good development potential, while the third is land considered unsuited for development because of terrain or location. Therefore, the third category is permanently zoned for acreage lots, while the second is an interim category; if the planning board is satisfied that a development can adequately be served by sewer and water lines and that necessary school and other public facilities can be provided, the board may reduce the lot size requirement to the 15,000 square feet minimum—only, however, if the proposed development is adjacent to existing developments.

Another provision now written into many well-studied ordinances allows the use of an average density

continued on page 186

School architect saves $1500* with unique classroom entrance design... ...and

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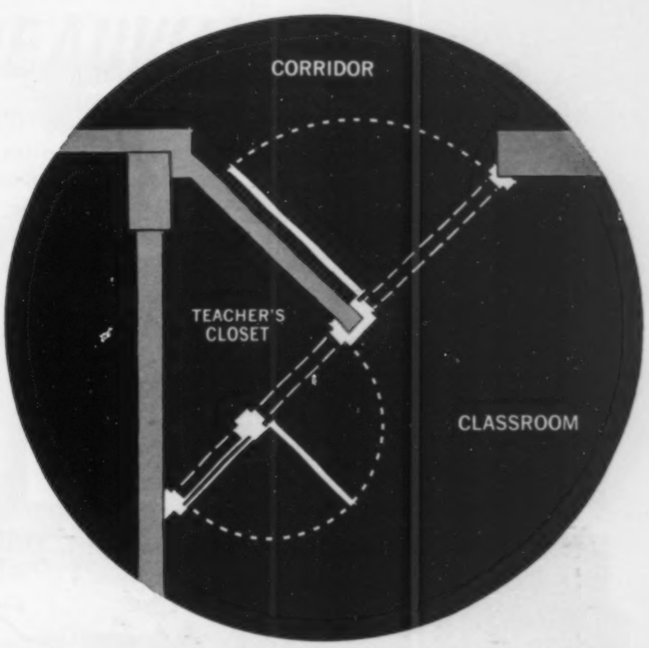

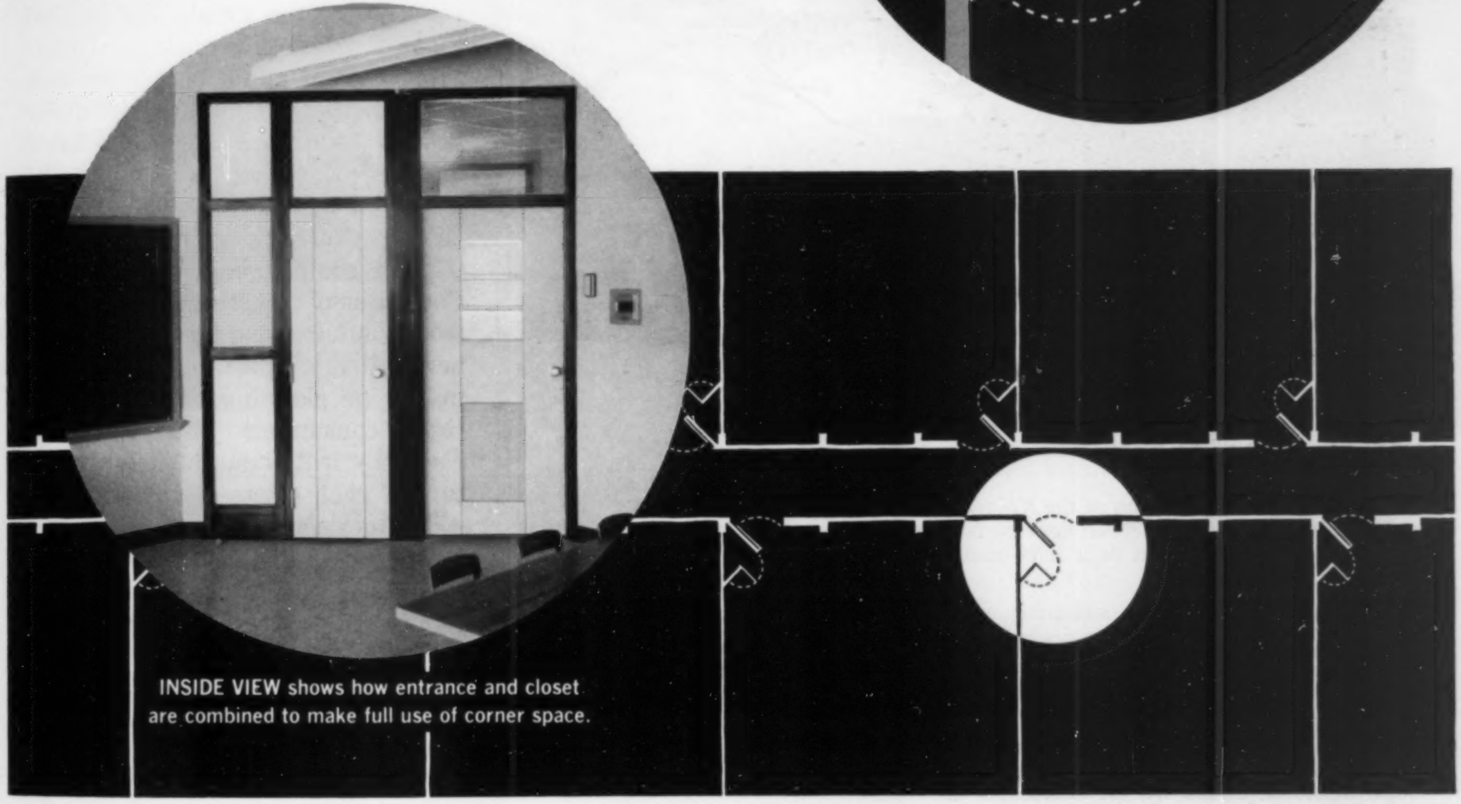
INSIDE VIEW shows how entrance and closet are combined to make full use of corner space.

Miami Shores Elementary School, West Carrollton, Ohio Architect: Walker Norwick & Associates, Dayton, Ohio

To reduce corridor width and still meet code requirements for unobstructed traffic flow, the architect positioned entrance doors in obliquely recessed openings so that they would not swing into corridor. This angular entrance design cut 3 feet off corridor width, resulting in substantial construction savings.

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control in lieu of strict minimum lot sizes. Thus, subdivisions can have varied lot sizes or small individual lots combined with restricted holdings of open space as common lands —or as dedicated public park. This exemption, like the Rockland County interim, is granted by the planning commission in the exercise of its platting powers.

The big view

Both of these refinements are the result of a coordinated master planning attack on growth problems, rather than the simple and isolated exercise of zoning controls. Unfortunately, in many communities such refinements are impossible under present conditions. In most villages and towns, zoning is administered by a local commission or board without any over-all plan to guide it and without competent professional aid. Commission meetings are often stormy affairs, and the unpaid members, often without any background in law or planning, find their jobs time consuming and thankless. Faced by irate householders, importunate real estate developers, and sometimes, shrewd lawyers, they are inclined to make their decisions on the basis of an informal referendum of affected property owners, on personal prejudice, or on a rudimentary understanding of certain things that are "bad"—such as "strip zoning." Indeed many boards are simply local citizen-committees trying desperately to preserve the status quo, in the face of intensive pressure for growth.

More serious than the well-intentioned ineptness of local boards is the sometimes questionable morality that knowledgeable zoning commission members may bring to their task. In one rural township, for example, a surveyor who was chairman of the local zoning commission circulated a petition for changing a residential district into a commercial district. He was, meanwhile, surveying one of the parcels involved for a syndicate of shopping center developers. Without apparent qualm or conscience, he then presented the petition to himself at the next meeting of the zoning commission and

continued on page 188

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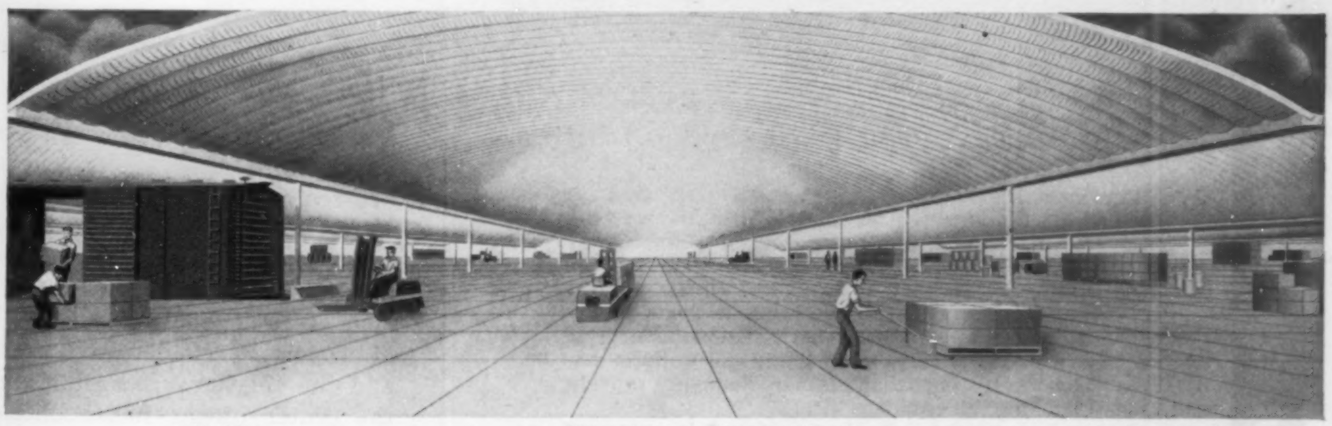

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then voted in favor of the change!

In some states (e.g., New Jersey) such conflicts of interest are unlawful. But in many of the outposts of suburbia, the zoning code is a single, greasy document in the Town Clerk's office, and even that copy may not include the latest amendments. Subdivision review by the local legislative body or the planning commission is, often, equally casual, without standards for judgment, and often strictly outside the law.

In many cases, the zoning decisions of the local commissions or councils would probably fail to stand up under the scrutiny of a court, if it came to that. Many communities now applying acreage zoning and other forms of growth control would indeed be well advised to establish their authority on a sounder basis.

At the same time, it would be desirable for most state legislatures to tighten up their enabling laws. The grant of zoning powers, for example, should be confined to those towns which have a properly constructed ordinance and an up-to-date land use study to accompany it. Platting powers should be available only (as they are in many states) to towns with bona-fide planning commissions and a proper regulatory and procedural ordinance. Building codes should be invalid unless they are easily obtained in written form.

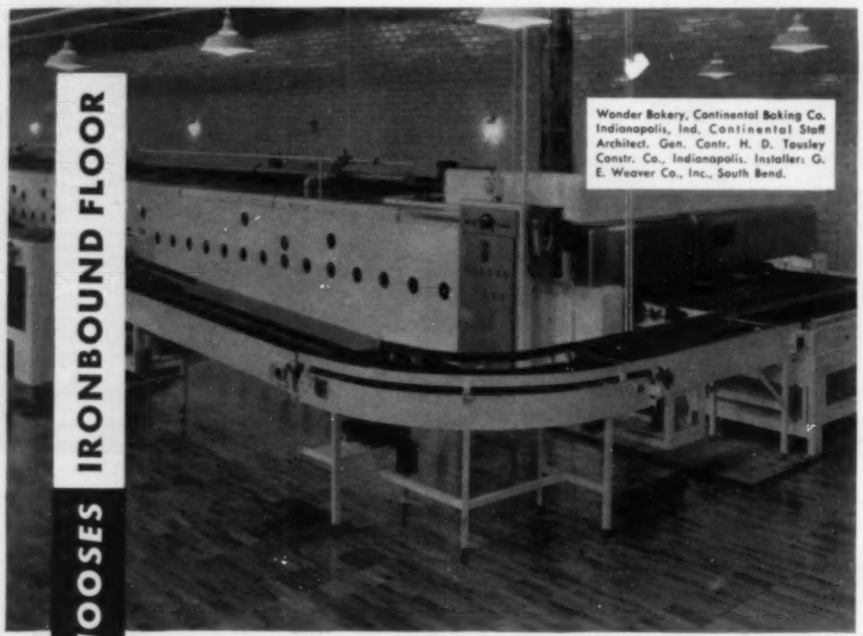
The blind lead

In the final analysis, however, the problem of controlling suburban growth can never be satisfactorily resolved until basic community goals have been determined. These goals, in turn, must be linked to a comprehensive community program employing zoning, platting, and building codes, as well as the positive powers of municipal expenditure to build the kind of environment the community wants. The objective should not be to stop growth, but to guide it toward a reasonable, balanced, and financially sound pattern for the future.

But, for dealing with some problems, even a perfect master-plan at the local level is not sufficient. The truly big questions of how to preserve permanent open land reserves, agricultural reservations, and parks are really a regional and state concern (FORUM, January 1958). Natural patterns of land use and settlement are generally ignorant of village or town boundaries. The laws of economics, the nature of the land, and the relationship of the land to the center of the metropolitan region require that many of the problems of suburbia and exurbia be handled on a regional basis.

But meanwhile, the residents of suburbia will continue to devise their individual laws, operate on their own pat theories, and build on their own prejudices, for in this affair, they are all, a quarter of a century later, somewhat like F. Scott Fitzgerald's Jay Gatsby:

"He had come a long way to this blue lawn, and his dream must have seemed so close that he could hardly fail to grasp it. He did not know it was already behind him." END



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PACKAGE BUILDERS *continued from page 123*

immediately without having to wait for detailed drawings and putting the job to bid (the bidding period alone can consume more than a month) seems to weigh heavily in corporate thinking. Companies such as Dow Chemical and Mead Johnson, which have used both package dealers and architect-engineers for their buildings, feel that for the hurry-up job the package dealer is the man to choose, but that if architecture is important and there is time to aim at distinction, the architect rates highest. Ford and Chrysler agree that time is the important determinant of who gets the work, but they add that the size of the job and its complexity enter in, too. Chrysler generally uses package deals on its training centers and its smaller, simpler jobs. Ford says "we'll give a package deal when we're sure of what we want and can give specific construction details."

Compared with the time factor, cost guarantees and the theme of undivided responsibility seem to be definitely secondary reasons for choosing the package deal. Actually, the bulk of package work done today by big firms is not done on a fixed, lump-sum basis at all (only about 18 per cent of Austin's volume, for instance, is in lump-sum). The more normal process is for client and package dealer to agree on one of three cost-plus arrangements: 1) cost plus a fixed fee in dollars to cover overhead and profit; 2) cost plus a fixed percentage fee, which may range anywhere from 3 per cent to 10 per cent, depending on the size of the job; or 3) cost plus a fee plus a save-and-share arrangement. Under this latter method, a price is set for the job in the contract with the provision that if actual construction costs fall below the price, the package dealer and the owner will share the savings on, say, a 50-50 basis. If costs exceed the price, the two share the overage in the same way.

Few clients seem to have any firm opinions about whether the package deal actually saves them money. Architects, of course, maintain that it does not, arguing that the loss of economies through the elimination of competitive bidding on the finished specifications far outweighs any savings that the client might get from coordinated operation. (One particularly sore point with architects: engineering and design costs are made to look unusually low in package deal contracts by tacking part of the actual costs onto something else.) While package dealers dispute all this, and stoutly maintain that they do effect savings, most clients seem unwilling to take either side. On the whole, they dismiss the issue by saying that prices seem fair for both package and architect work, considering what is done.

Protective weapons

If time is really the essence of the package deal's appeal, many of the architects' proposals for combatting the package would seem headed up the wrong hill. Since the AIA committee began its study, there has been a great deal said about the need for the architect to expand and improve his services: to do more in site selection, tighten up his estimating and cost analysis, help in the arrangement of financing, give better advice on taxes and insurance—in short to offer his clients more of the "businesslike" service that owners can get from the package dealer. Obviously such improvement is needed; though most architects do offer clients these services, the economic side of building is still one about which many architects are too casual. Were there a way to finance a broadened, more thorough set of services, it would undoubtedly be all to the good. But it would not do anything about the time problem.

There is really only one way for the architect to match the delivery schedule of the package builder, and that is for him to team up in some manner with a general contractor. If architect and contractor can start work together on a building, without the two or three months wait for detailed drawings and bid-taking, construction can move along at just as fast a clip as the package job. What's more, there is no particular trick to accomplishing such a link-up, provided competitive bidding is not essential. The client can make the tie by choosing a contractor at the same time he picks an architect. Or the architect can do it by establishing, in advance, a joint venture with a contractor. In this case, the two seek work as a team, becoming in effect a package operation, but one which still preserves independent entities. (Still another method of saving time: put work to bid on a unit-price basis without waiting for plans and specifications. In other words, take bids for, say, concrete at a per-yard price with the number of yards needed to be figured later.)

Short of the architect becoming a package dealer, the joint venture is probably the most direct answer possible to the package deal. It has been used frequently in recent years, despite the danger for the architect of "losing his identity," as George H. Miehls, president of Albert Kahn, puts it, not to mention the danger of his deferring to the contractor-partner and losing his role as client's representative.

In the end, the problem of the package deal seems to rest squarely on the line between design (creation) and building (execution) which was drawn so long ago.

While the architect may have to draw much closer to building execution, there is much to be learned by today's client about the more complicated process of creation. Operations that seemed safely routine turn suddenly obsolete in today's world of rapid change, and new problems turn up such as giving identity or a "face" to the company that owns the building. It is here that well-organized, thoroughly greased procedures tend to fail, either one's own or those of building organizations. Where problems are fresh the call is generally for the independent professional. But meanwhile, speed and economy are needed too, and the architect will lose who, in the words of Walter Gropius, sits "on his anachronistic brick pile, pathetically unaware of the colossal impact of industrialization." END

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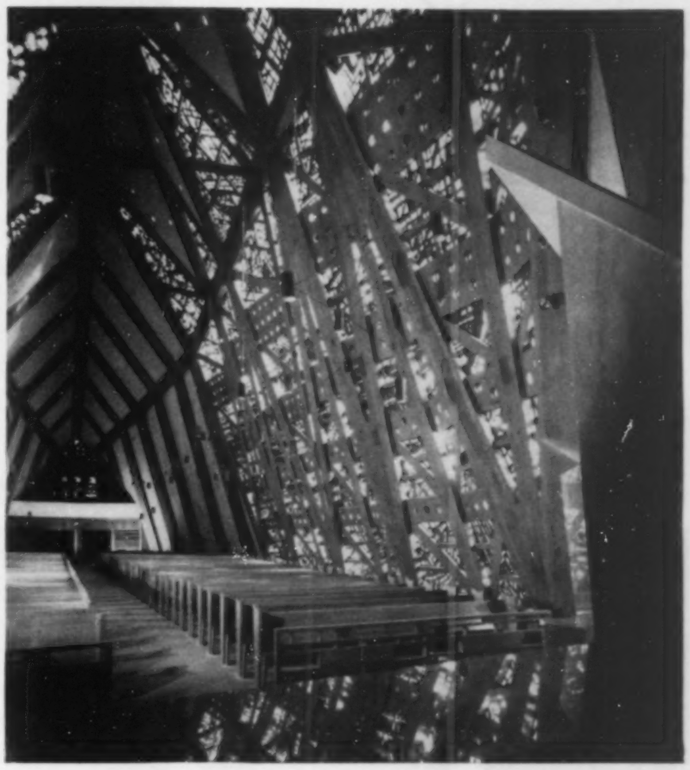

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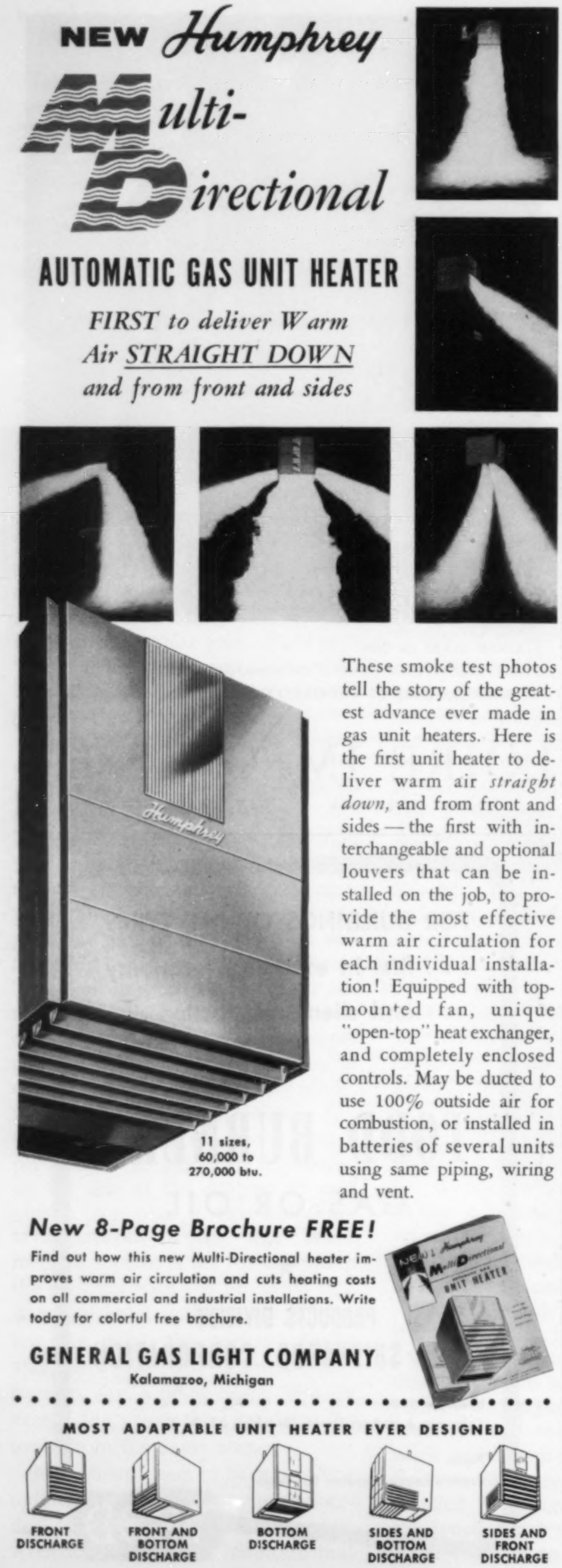

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PAUL RUDOLPH *continued from page 129*

Despite Rudolph's prowess as a businessman, he has not, thus far, let his energies run away with his artistic integrity. He has, he admits, moved a bit too fast at times when it might have been wiser for him to have gone more slowly (some of his Florida houses he now considers objectionably exhibitionistic). But to date the businessman is not in command.

There seems to be no real cause to fear, either, that the professor will overshadow the architect. Rudolph feels that his teaching job will be better done in direct proportion to his success as an architect. He says with precision: "At Yale they understand I am an architect."

His architecture is, indeed, singularly free from any influences beyond his own creativity, even from the strong winds of contemporary fashion. In terms of schools, he is unwilling to join the disciples of Mies van der Rohe, the builders of our cities' new gleaming glass and metal towers. He is equally disinclined to pursue the shadowy paths of Wright and Le Corbusier.

Rudolph talks most naturally and becomes most excited when discussing his personal objectives as an architect. Some of them are concepts and ideas that he feels must be tested before he or, for that matter, U.S. architecture itself can be ready for the next big step into greatness: the sculptural possibilities of steel ("steel started off as a sculptural medium—take Paxton's Crystal Palace of 1851—but then the modern movement fell in love with the cage"), new designs in precast reinforced concrete ("the costs of precast concrete architecture in this country are not so frightful as has been thought—often there is merely a one per cent differential in comparative building costs"), and the proper scale for art in our automobile-paced cities ("American sculptors and painters aren't awake—they're still fooling round with statuettes").

These are three of the challenges that Rudolph the architect wants to contend with. And for Rudolph the professor, there is a list of more abstract challenges. The most immediate, he feels, is the need for architectural theory to catch up with the great building activity that has been going on in recent years. As he expressed it recently to a gathering of Yale alumni, ". . . action has outstripped theory. . . . The last decade has thrown a glaring light on the omissions, thinness, paucity of ideas, naïveté with regard to symbols, lack of creativeness, and expressiveness of architectural theories as they were developed by the twenties. . . . Modern architecture is still a gangling, awkward, ungracious, often inarticulate, precocious, adolescent thing, which has not yet even begun to reach full flower. . . . It is the unique task and responsibility of a great university such as Yale to study not only that which is known but, far more important, to pierce the unknown. My passion is to participate in this unending search." END

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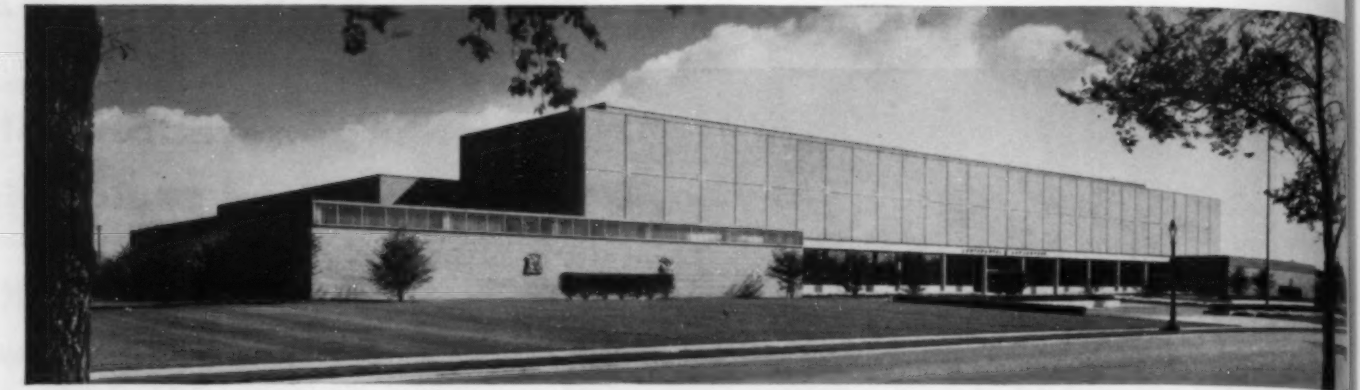

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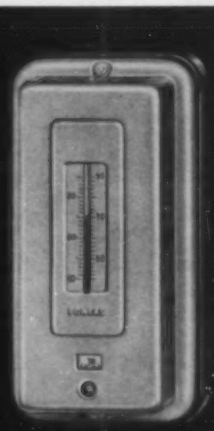

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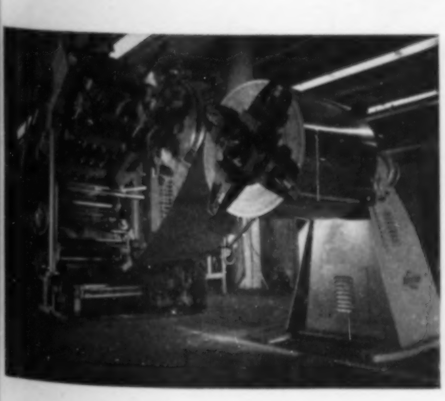
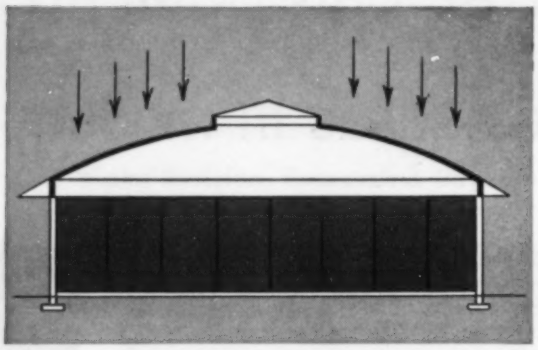


new approaches to structural design with fir plywood



Engineering tests by Douglas Fir Plywood Association showed vault resists three-times-normal roof load. Deflection at midspan was negligible. Note how door-high roof line saves wall area.

FIR PLYWOOD

ARCHITECT: Robert B. Price, A. I. A., Tacoma, Wash.
Robert C. Wing, Consulting Engineer

IN THIS graceful stressed-skin fir plywood domical roof, Architect Price has developed a simple and precisely engineered unit that combines beams, purlins and roof sheathing.

The first application of this new semi-spherical roof system is in the four-room satellite school shown at right. In its design, Price sought to create "an exciting and stimulating space with a high degree of flexibility and substantial construction economies."

Adaptable to other types of buildings, the Price roof system is a logical design evolution in which lightweight fir plywood replaces heavier and costlier materials. It provides a long, post-free span, pleasing mass and profile, has excellent lighting, insulation and acoustical properties.

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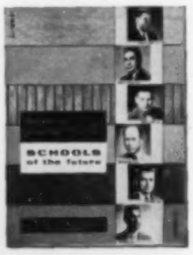
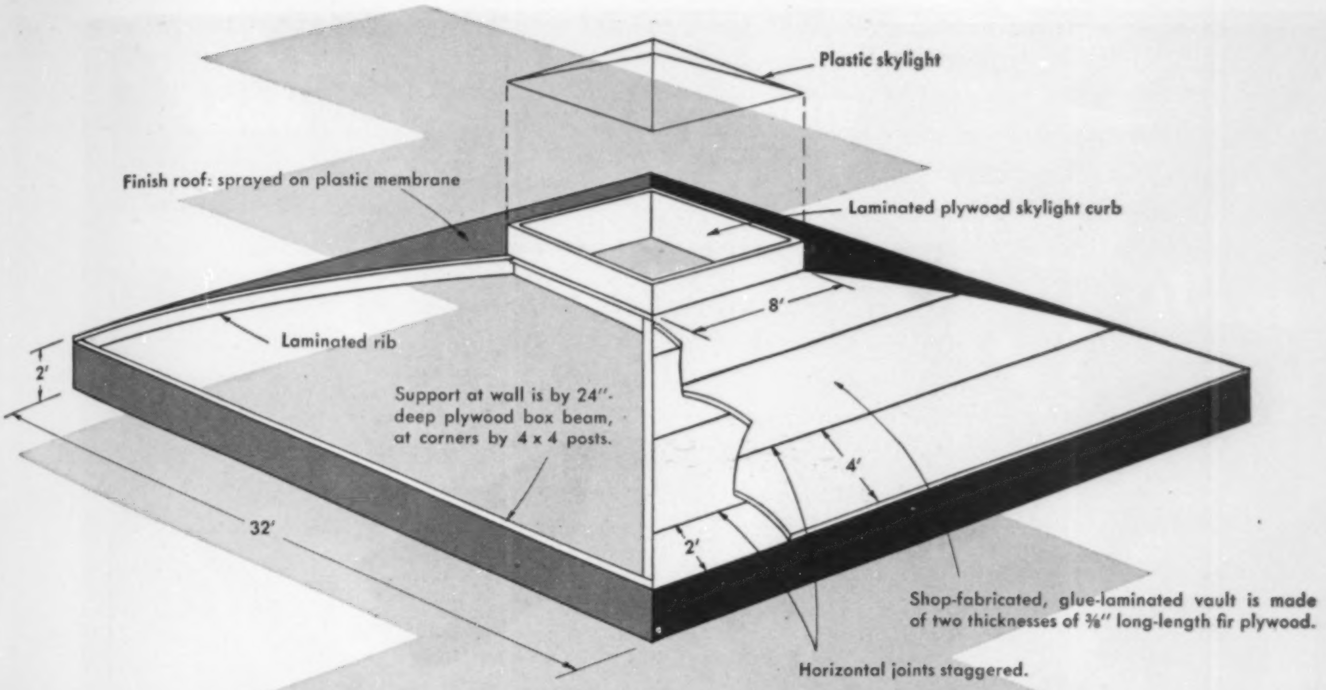
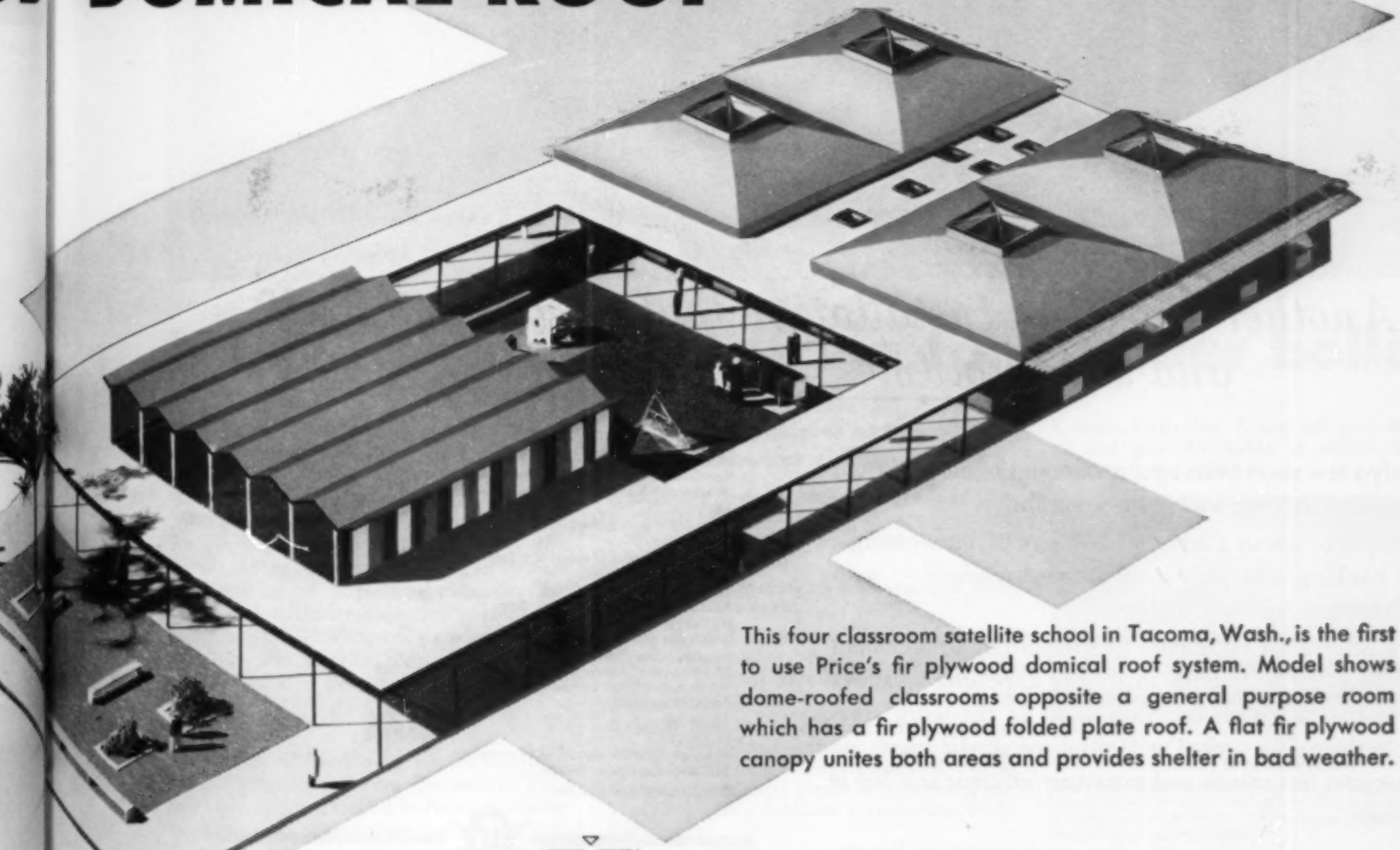
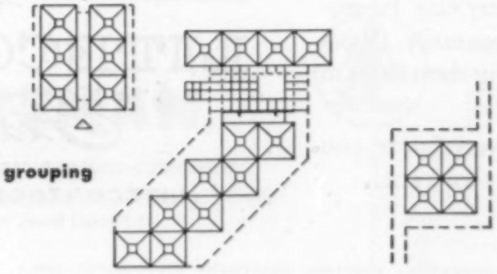



Plastic skylight
Finish roof: sprayed on plastic membrane
Laminated plywood skylight curb
8′
Laminated rib
2′
Support at wall is by 24″-deep plywood box beam, at corners by 4 x 4 posts.
4′
32′
2′
Shop-fabricated, glue-laminated vault is made of two thicknesses of ⅜″ long-length fir plywood.
Horizontal joints staggered.

DOMICAL ROOF



This four classroom satellite school in Tacoma, Wash., is the first to use Price's fir plywood domical roof system. Model shows dome-roofed classrooms opposite a general purpose room which has a fir plywood folded plate roof. A flat fir plywood canopy unites both areas and provides shelter in bad weather.



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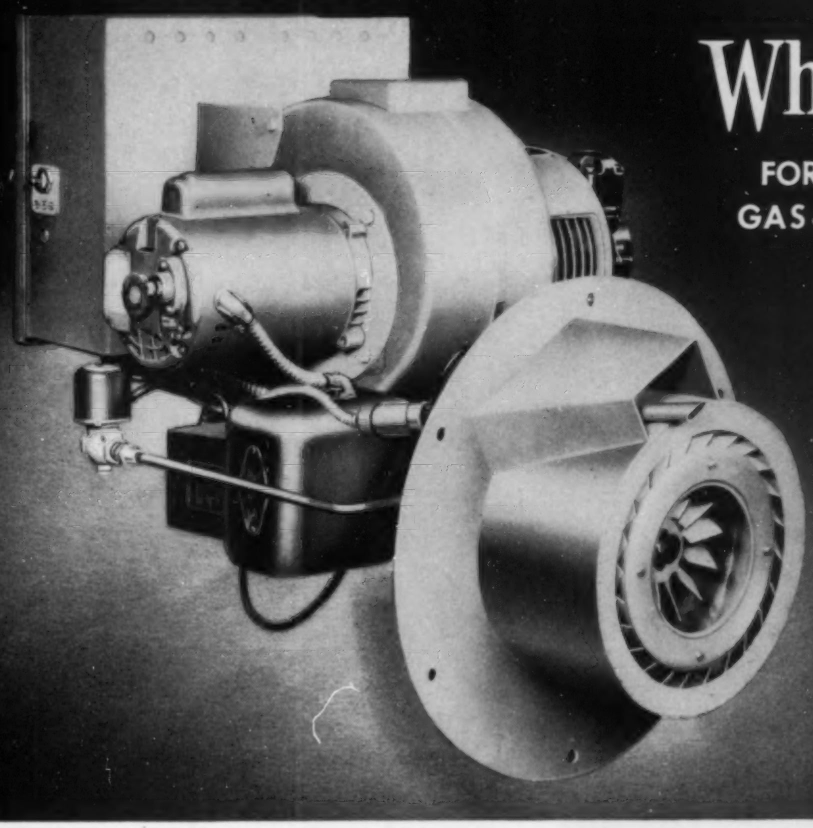

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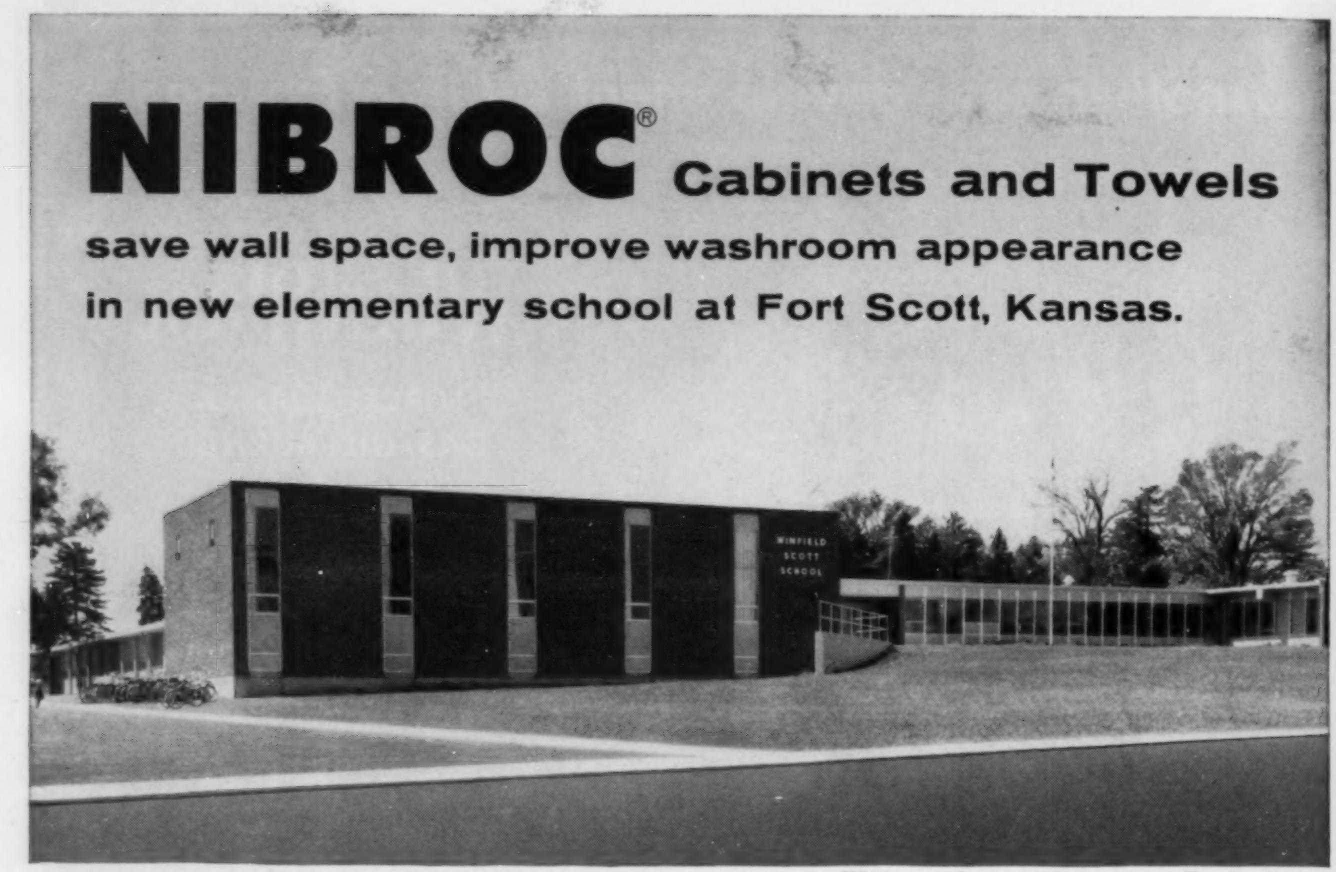

ARCHITECTS: Williamson-Loebsack & Associates, Topeka, Kansas

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Pictured above: North Penn Senior High School, Lansdale, Penna. · *Architects:* Howell Louis Shay & Associates · *Contractor:* Wark & Co.

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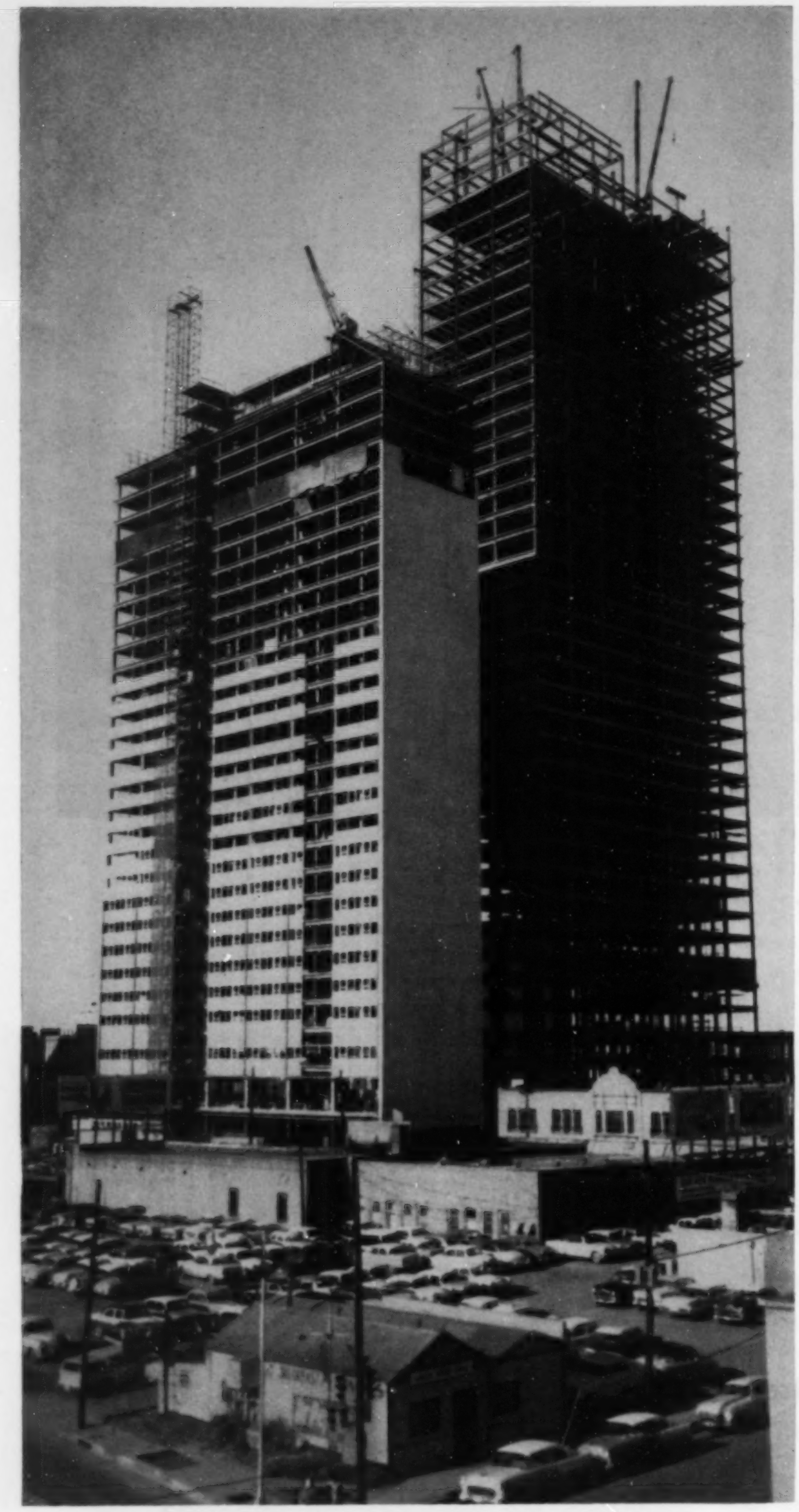

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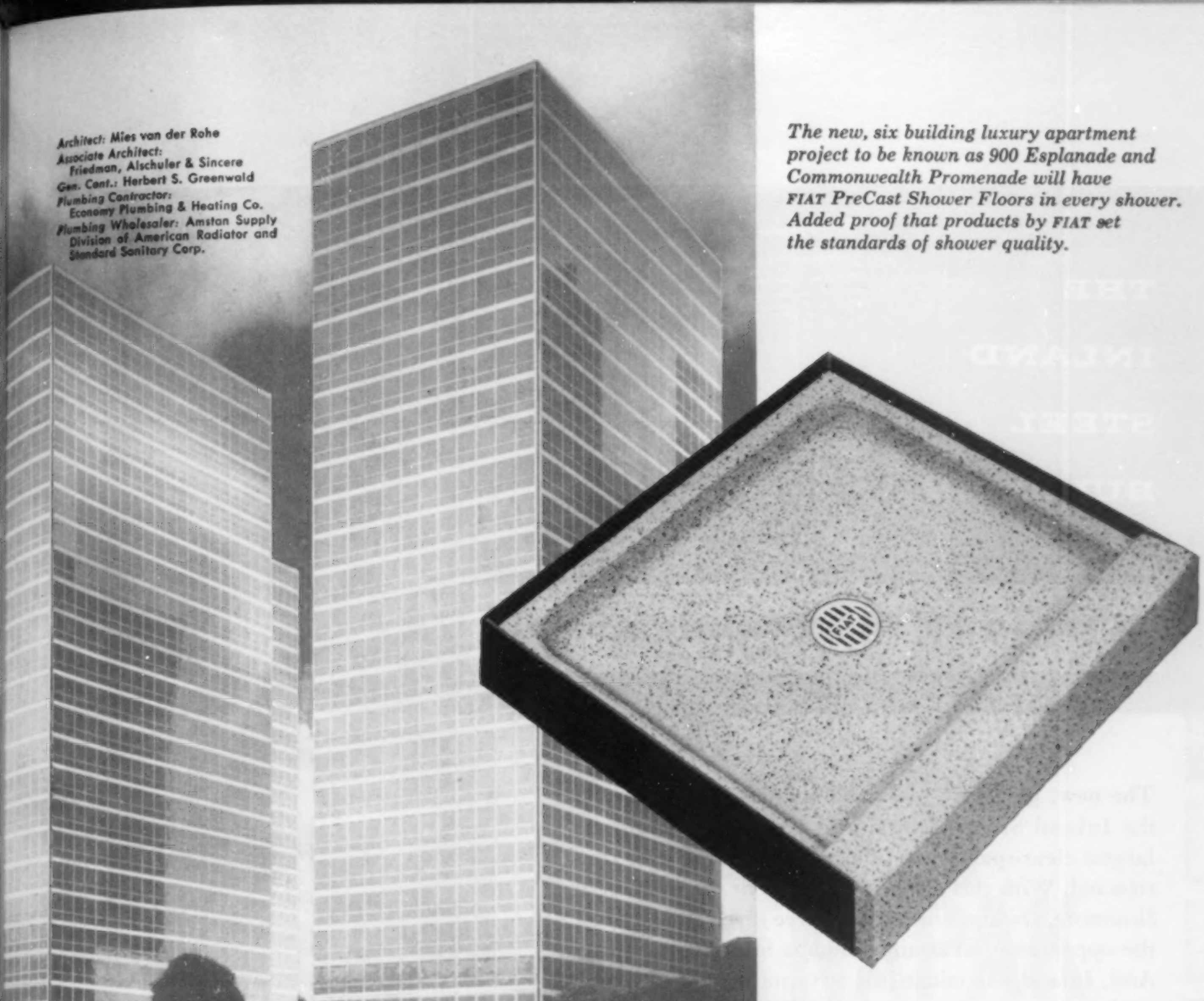

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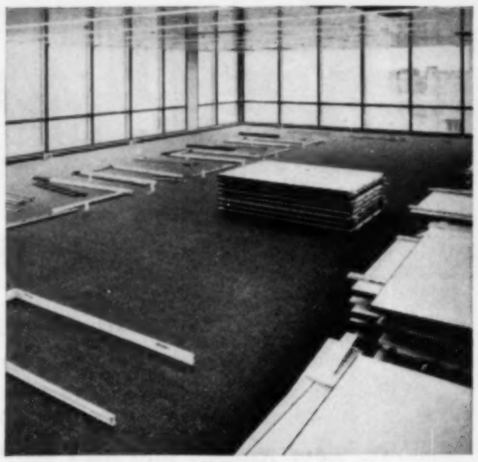
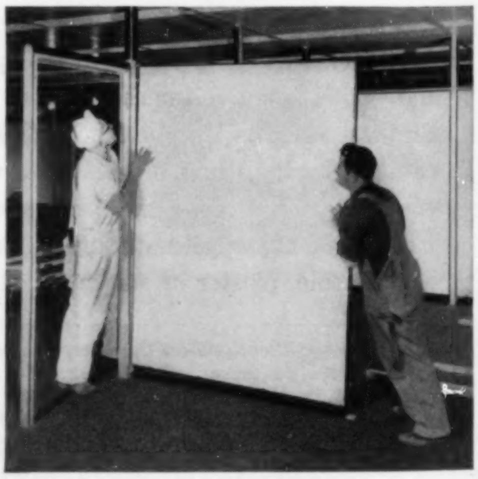
a unique idea takes shape



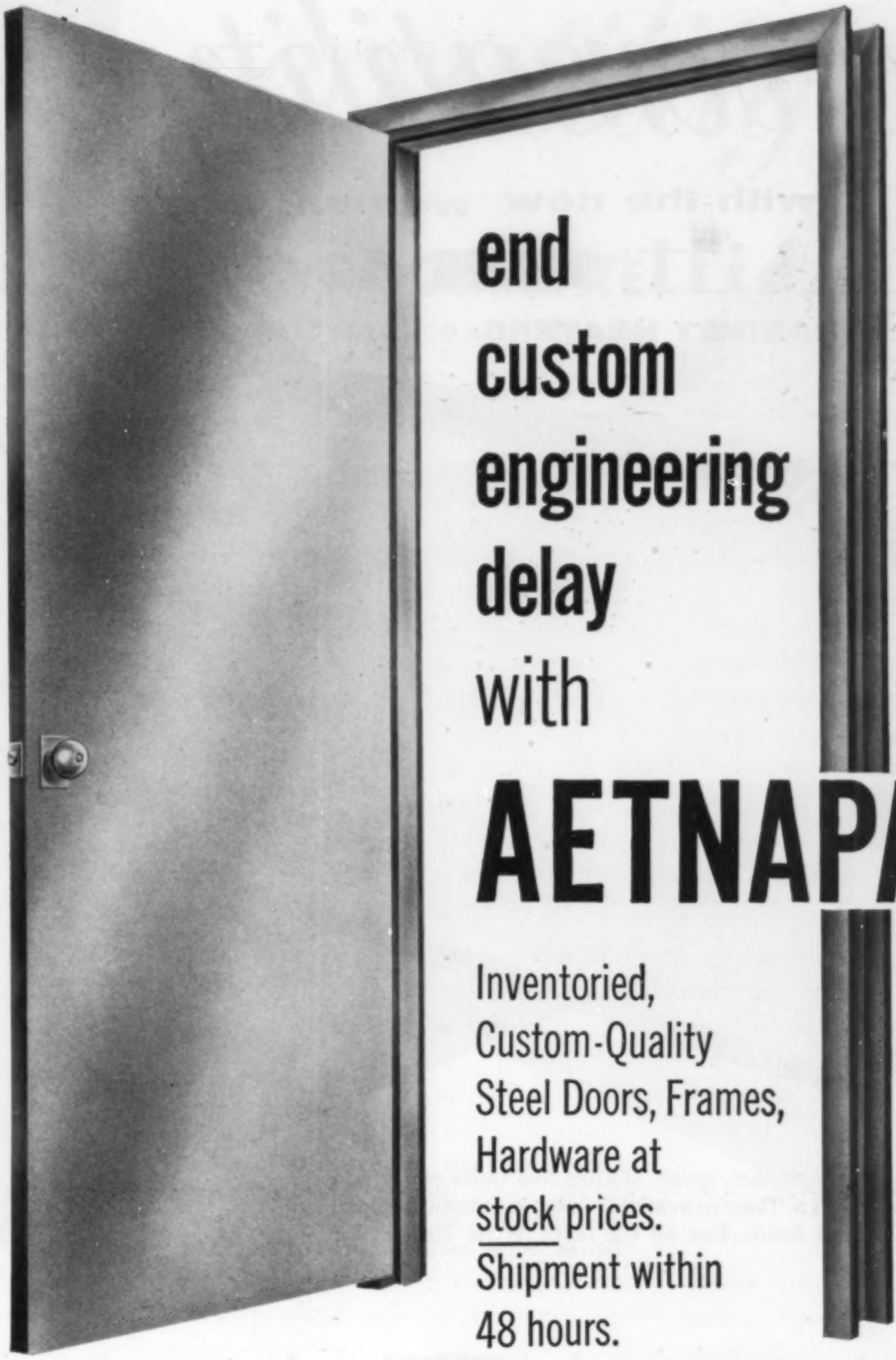


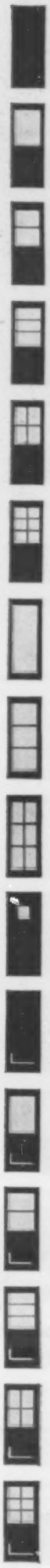
The new, gleaming glass and stainless steel home of the Inland Steel Company in Chicago contains the largest clear-span floors of any tall building ever constructed. With this design achievement the architects, Skidmore, Owings and Merrill have given Inland Steel the opportunity to attain complete interior flexibility. And, Inland has taken full advantage of this opportunity through the use of movable interior walls.

Because the 177 x 58 foot floor area is uninterrupted by supporting columns, the entire ceiling was hung and the carpeting laid floor-by-floor instead of room-by-room. While these operations were underway, the movable interior walls designed by S-O-M were prefabricated by The E. F. Hauserman Company. Engineers at Hauserman worked closely with S-O-M to bring their wall design to an economical and practical production stage.

Installed quickly and without the mess of conventional wall construction, the Hauserman walls lend a feeling of openness to the wide floor areas yet give ample privacy. In the future, it will be possible to make extensive rearrangements in office space on any floor over a week-end without disturbing office routine. S-O-M predicts that this flexibility will make Inland's space about "17% more efficient than average".

Facts about this new wall system and the rest of HAUSERMAN'S complete line can be secured from The E. F. Hauserman Company, 7141 Grant Avenue, Cleveland 5, Ohio.





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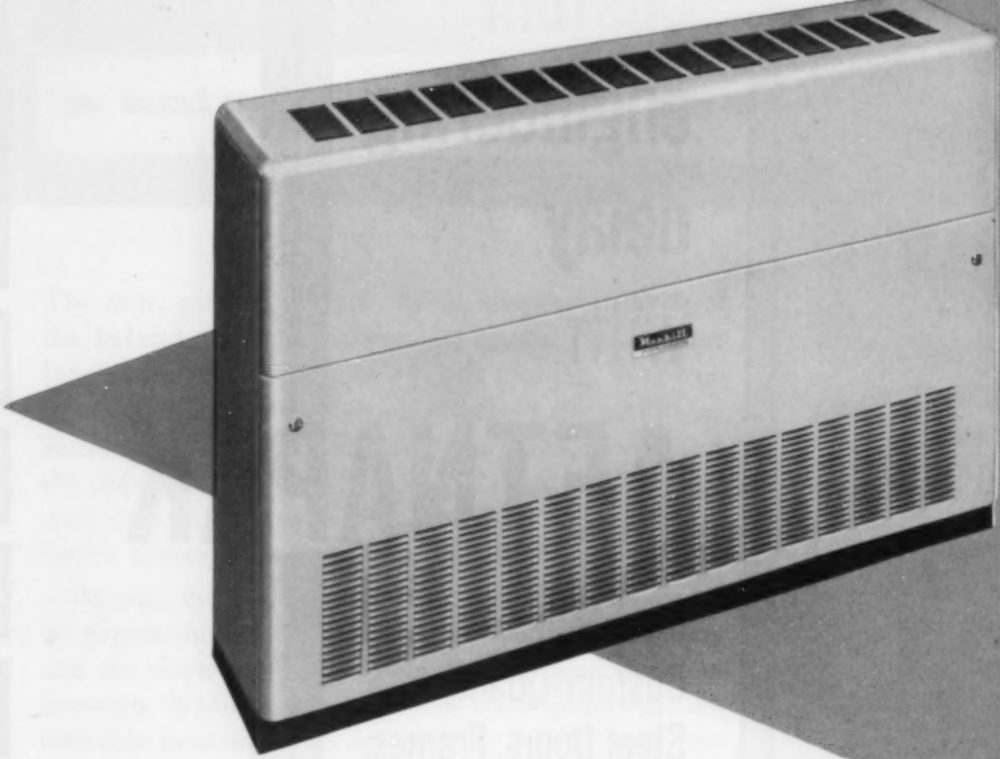


27 STANDARD
FLOOR TYPE
INSTALLATIONS

plus

32 STANDARD
WALL AND CEILING
TYPE INSTALLATIONS

equals

59* STANDARD
INSTALLATION
ARRANGEMENTS

multiplied by

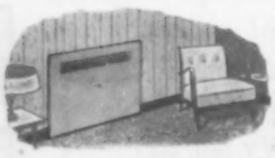
7 STANDARD
MODELS

totals

413
STANDARD MODEL
INSTALLATION ARRANGEMENTS

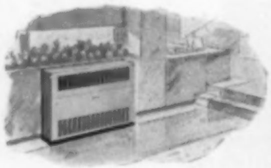
* 34 of these arrangements can be invert
All are available with a variety of
speeds and (steam or water) capacit

You can fit these compact, quiet, trouble-free units easily and smartly into any plan. They're available in seven standard colors, with baked enamel finish. Get all the facts. Write Nesbitt for publication 403-2.

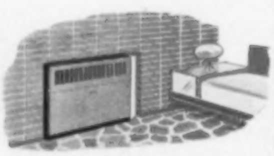


hotels

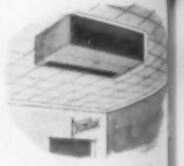
offices



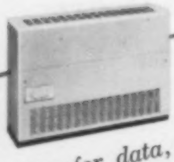
lobbies



institutions



business places



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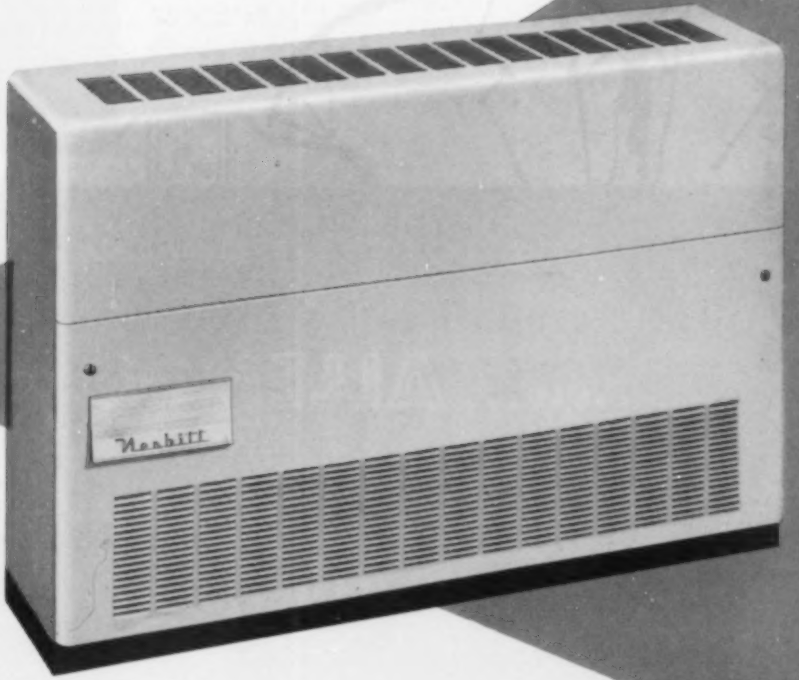

20 STANDARD FLOOR TYPE INSTALLATIONS

plus

22 STANDARD WALL AND CEILING TYPE INSTALLATIONS

equals

42 STANDARD INSTALLATION ARRANGEMENTS

multiplied by

7 STANDARD MODELS

totals

294* STANDARD MODEL INSTALLATION ARRANGEMENTS

* ½ to 5 tons cooling capacity, 25 to 100 MBH Heating Capacity.

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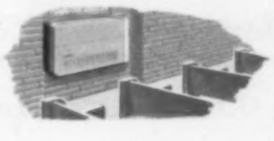
hotels

offices



churches

hospitals

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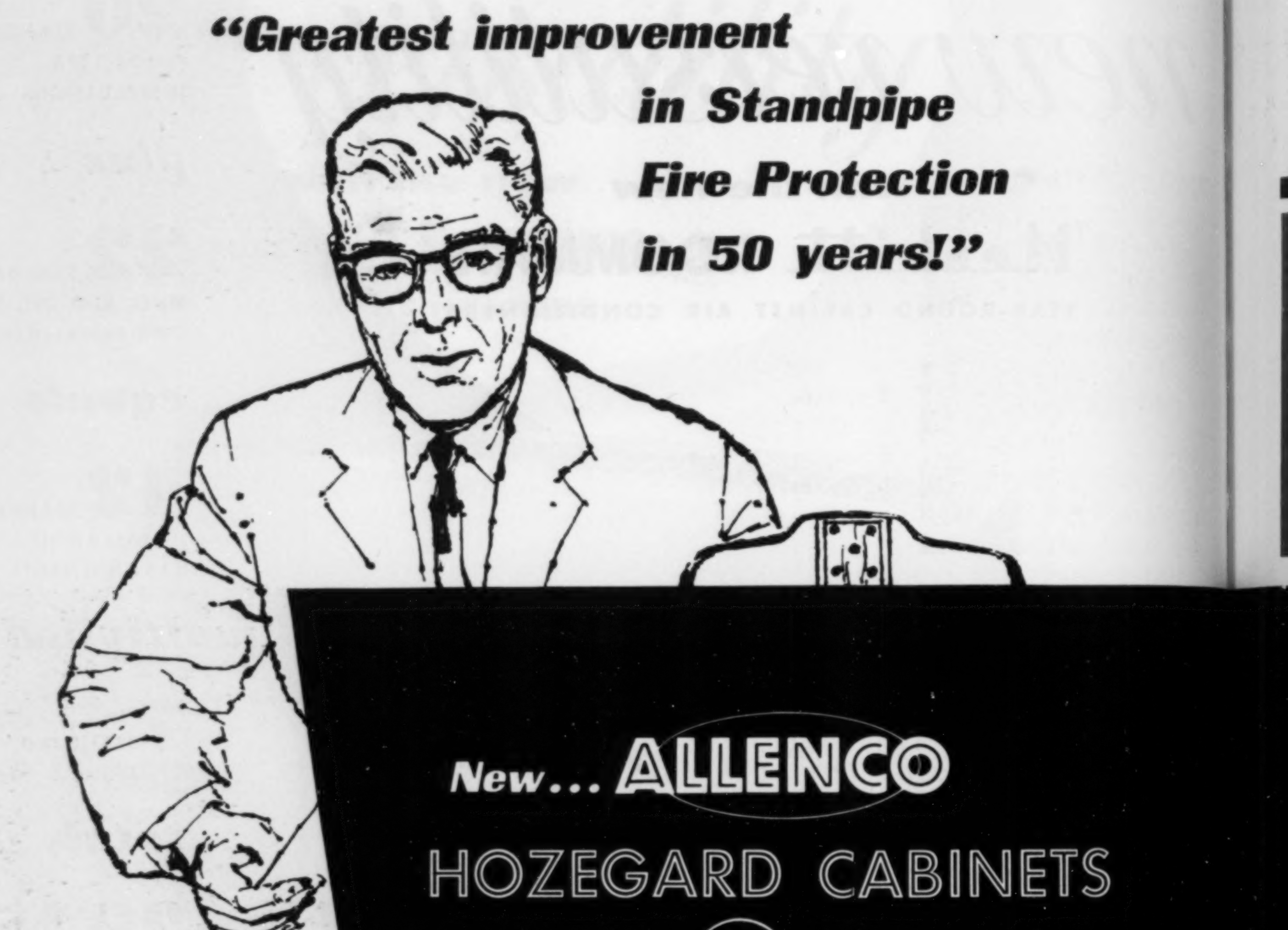

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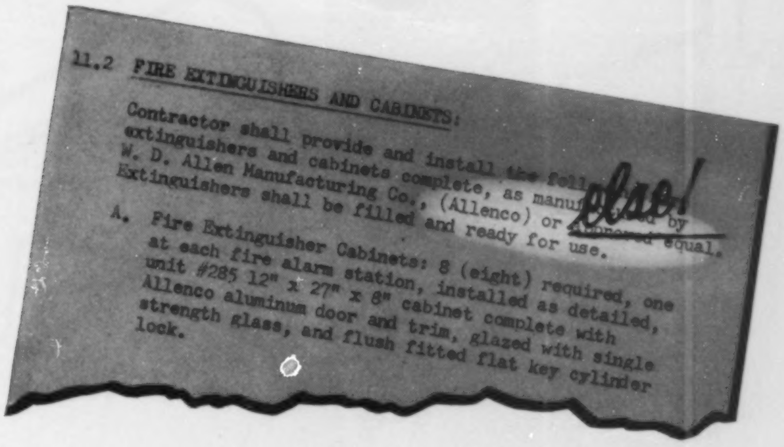
UL **Listed**—thoroughly tested; *first* complete fire hose cabinet unit, including equipment, to be 100% Underwriters Listed

**using appropriate framing and solid (no glass) door*



11.2 FIRE EXTINGUISHERS AND CABINETS:

Contractor shall provide and install the foll[illegible] extinguishers and cabinets complete, as manuf[illegible]d by W. D. Allen Manufacturing Co., (Allenco) or ~~approved~~ else! equal. Extinguishers shall be filled and ready for use.

A. Fire Extinguisher Cabinets: 8 (eight) required, one at each fire alarm station, installed as detailed, unit #285 12" x 27" x 8" cabinet complete with Allenco aluminum door and trim, glazed with single strength glass, and flush fitted flat key cylinder lock.

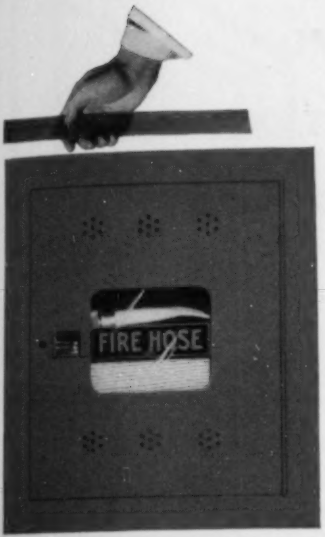


Fig. 7168
19"x22"x5½" I.D.
Holds 50 or 75-feet
of 1½" linen hose

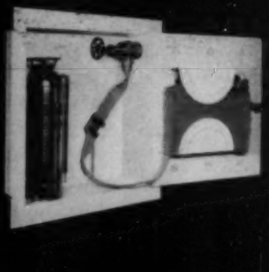


Fig. 7169
26"x27"x8" I.D.

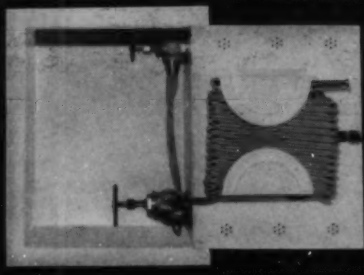


Fig. 7172
24"x30"x8½" I.D.

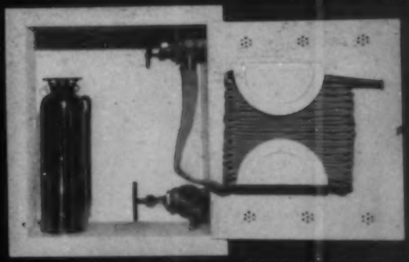
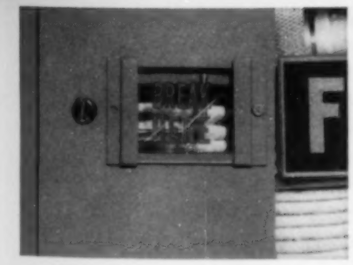


Fig. 7173
27"x30"x8½" I.D.

Each holds up to 100 feet of 1½" linen hose, 50 or 75 feet of Allen-flex hose, or 50 feet of Qua-flex* hose, plus choice of extinguishers where shown and Fire Department valve where shown.



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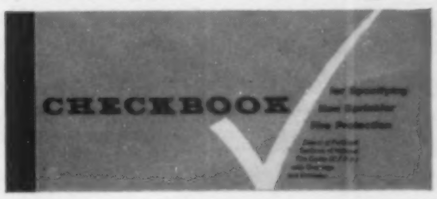

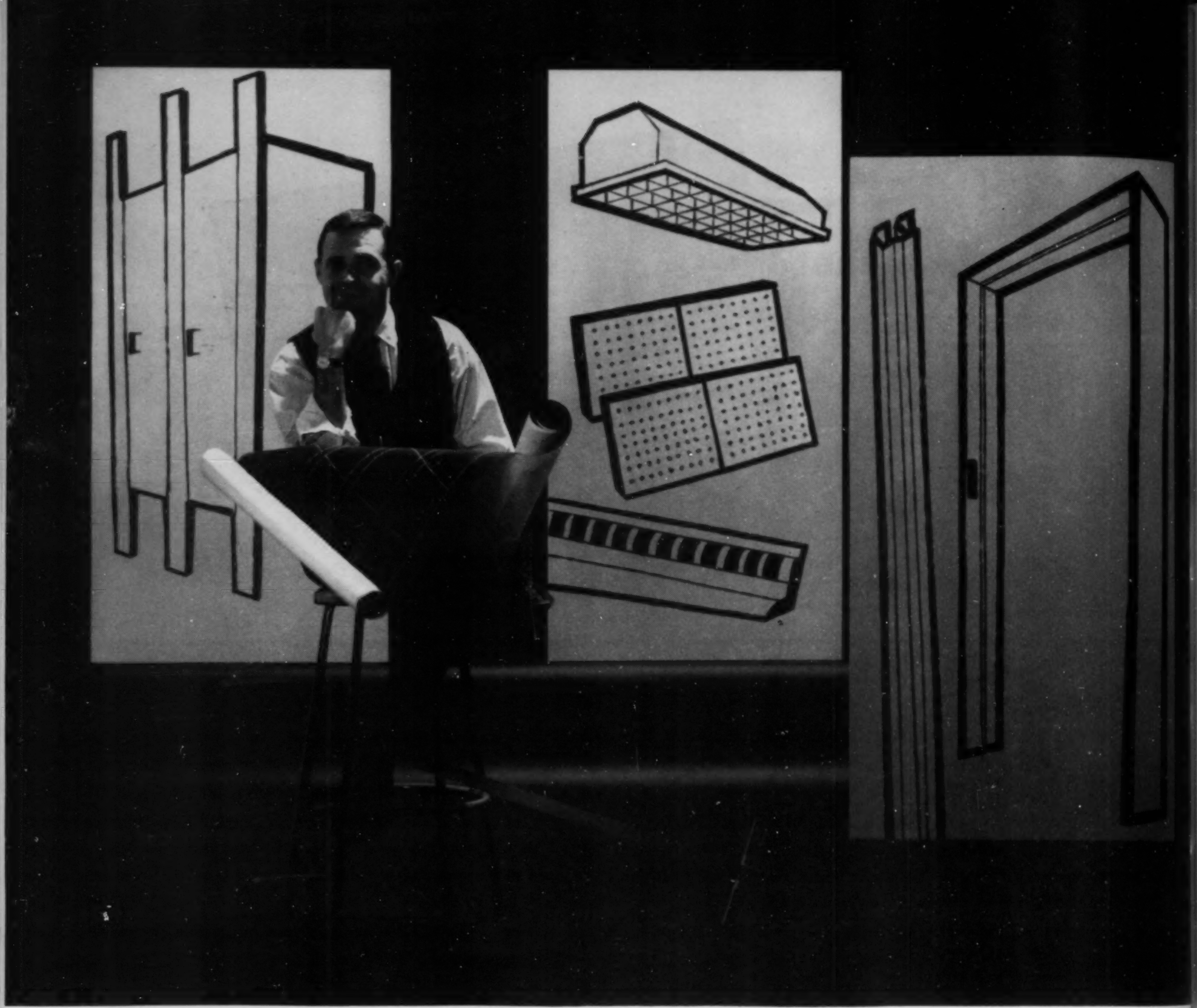

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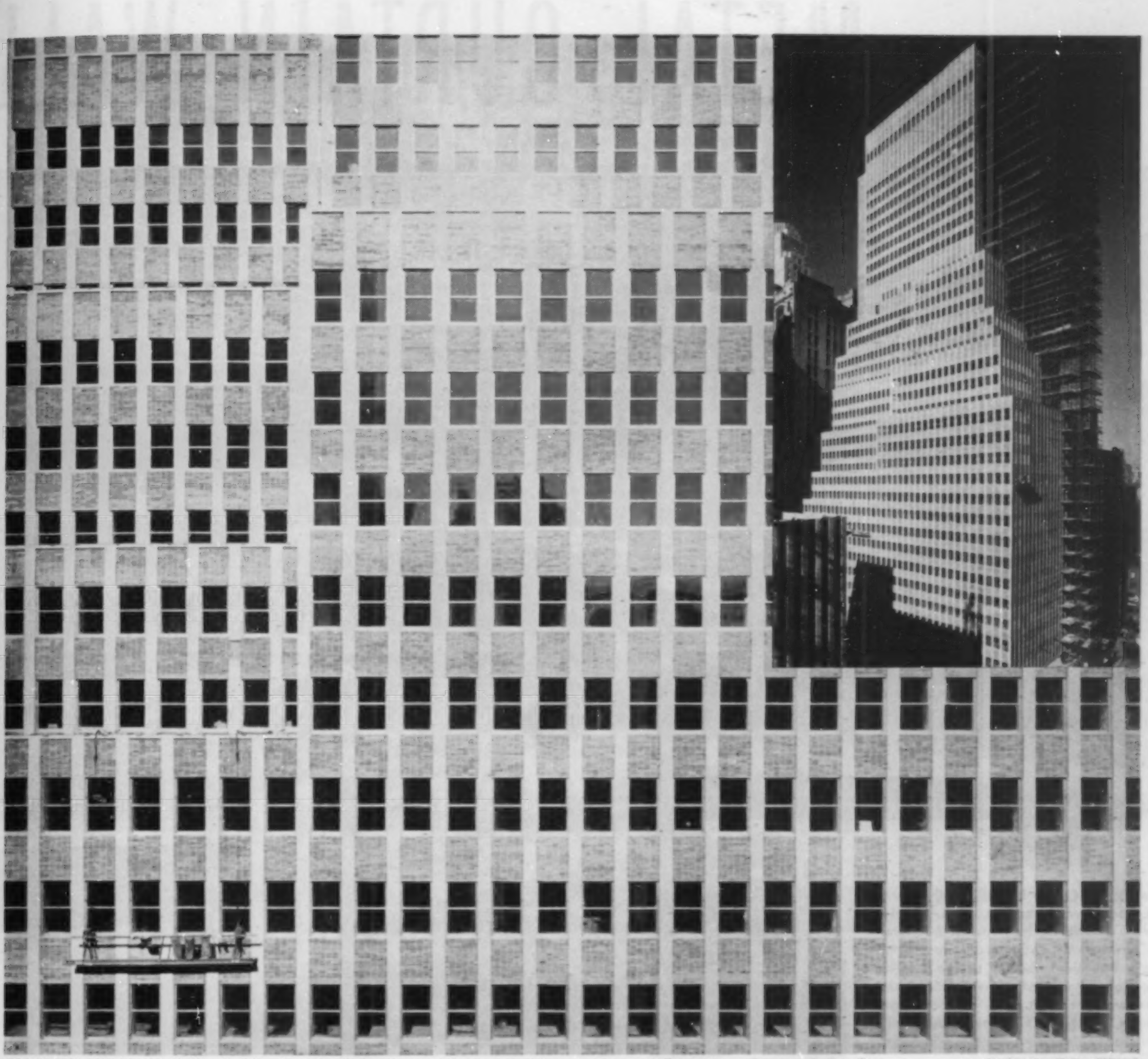

111 WEST 40th St., N. Y. C. Architects: Kahn & Jacobs and Sydney Goldstone General Contractor: Geo. A. Fuller Co. Photos by Felix Gilbert

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INSIDE... Air-conditioning enclosures, interior steel pier facings between windows and steel partition fillers.

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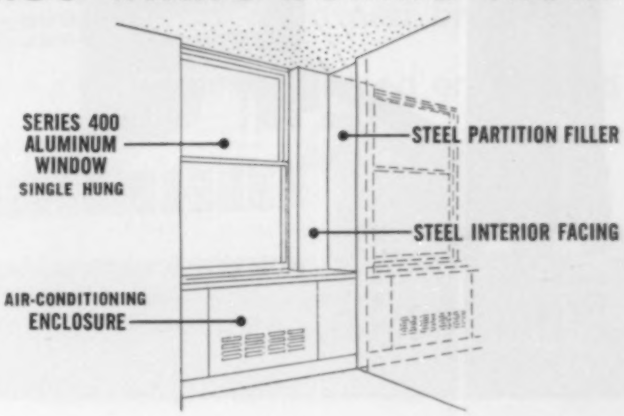
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STEEL PARTITION FILLER
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Above: Rouge Office Building of the Ford Motor Company, Dearborn, Mich. Eberle M. Smith Associates, Inc., Archts. & Engrs. Long Construction Co., General Contractors. At Right: Bay Shore Station of The Toledo Edison Company. Mahon Wall Plates in this structure are 60 Ft. long. Toledo Edison Company, Designers. George A. Saathoff, Consulting Engineer. A. Bentley & Sons Co., General Contractors.

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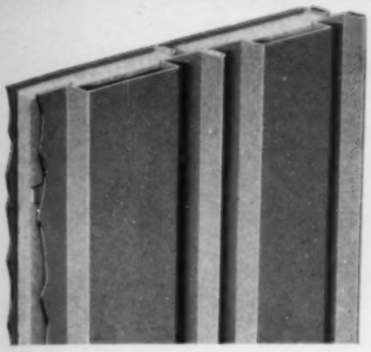
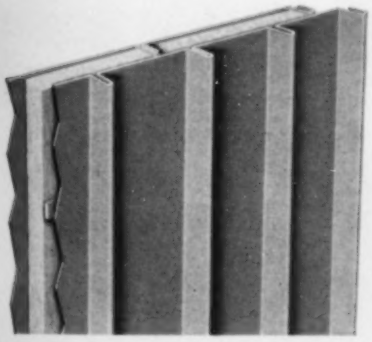
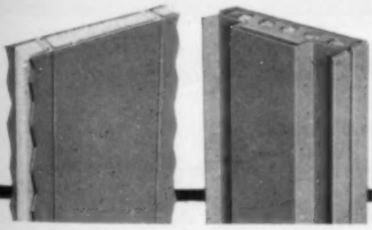


MAHON FLUTED WALL
FIELD CONSTRUCTED



MAHON RIBBED WALL
FIELD CONSTRUCTED



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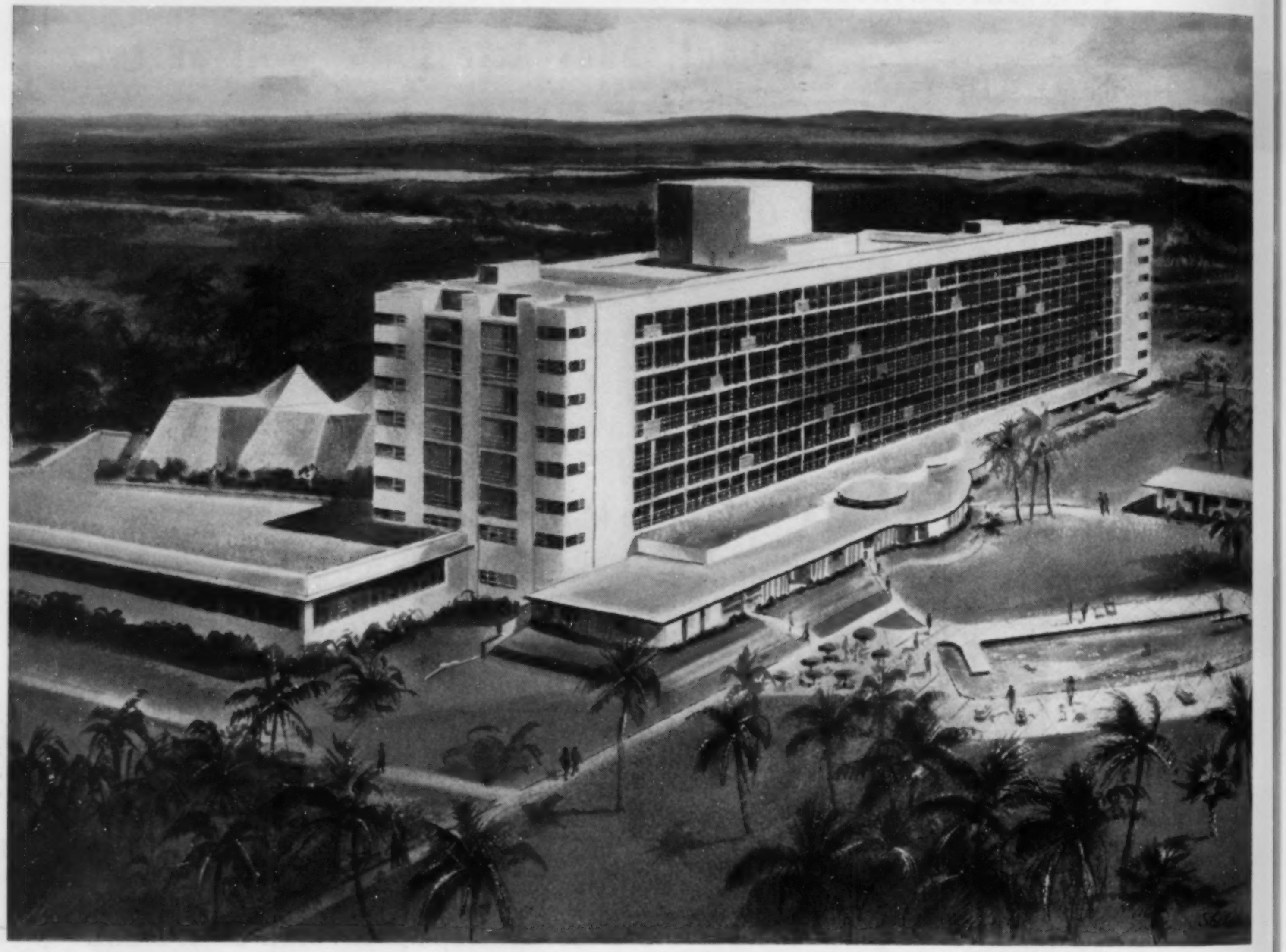

El San Juan Intercontinental Hotel, Isla Verde, Puerto Rico

A fine example of today's sparkling resort hotel architecture, this 369 room structure was designed by Roy F. France & Son, Miami Beach, Florida. It is supported by 776 Raymond Step-taper Piles. El San Juan Intercontinental is operated by Intercontinental Hotels Corporation of New York under a lease from the San Juan Hotel Corp. Taylor Caribbean Construction Corp. of Miami were the General Contractors.

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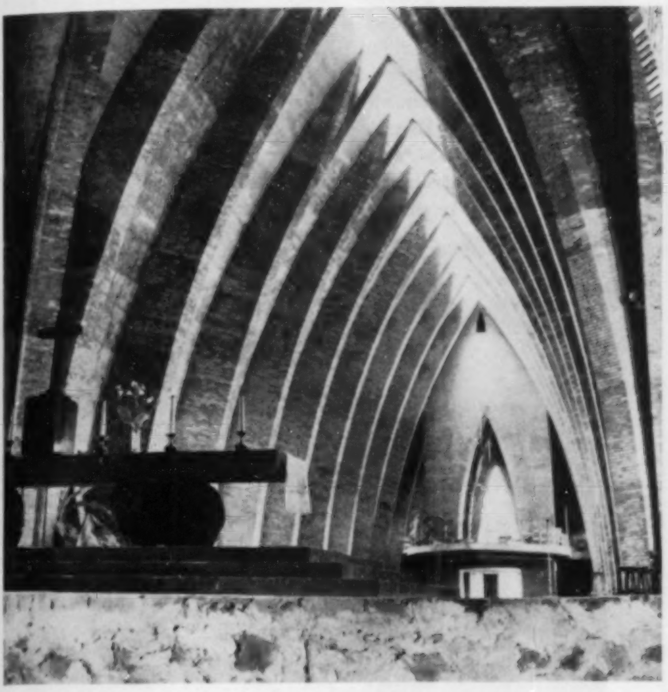
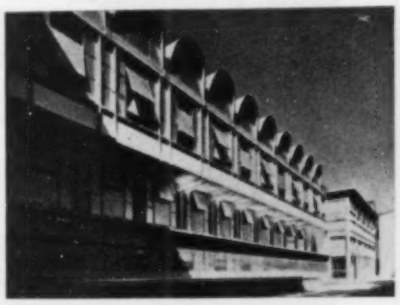
Abroad

A continuing review of international building



CONGO CHURCH

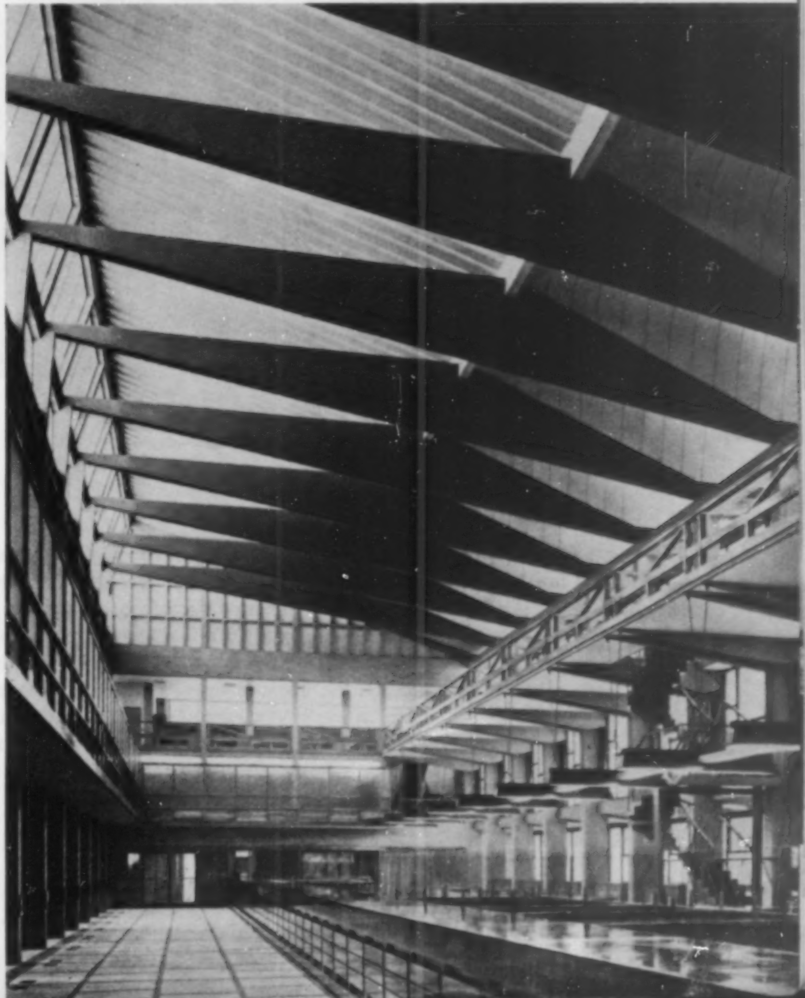
Last month at Brazzaville, French Equatorial Africa, mass was celebrated to a tom-tom accompaniment. Even more unusual than the music was the architecture, for the mass was held in the surprisingly modern atmosphere of recently completed "Sainte-Anne du Congo." In designing the church French Architect Roger Errel adapted the crude forms of native life without doing violence to Roman Catholic doctrine. Among the forms used: war canoe ribs (recalled in the 60-foot-high arches), mud huts (repeated in the bases of the altar) and elephants (a statue of one is used to support the lectern). Because of the difficulty of obtaining building materials in Brazzaville, the church took 18 years to build, cost $3 million.

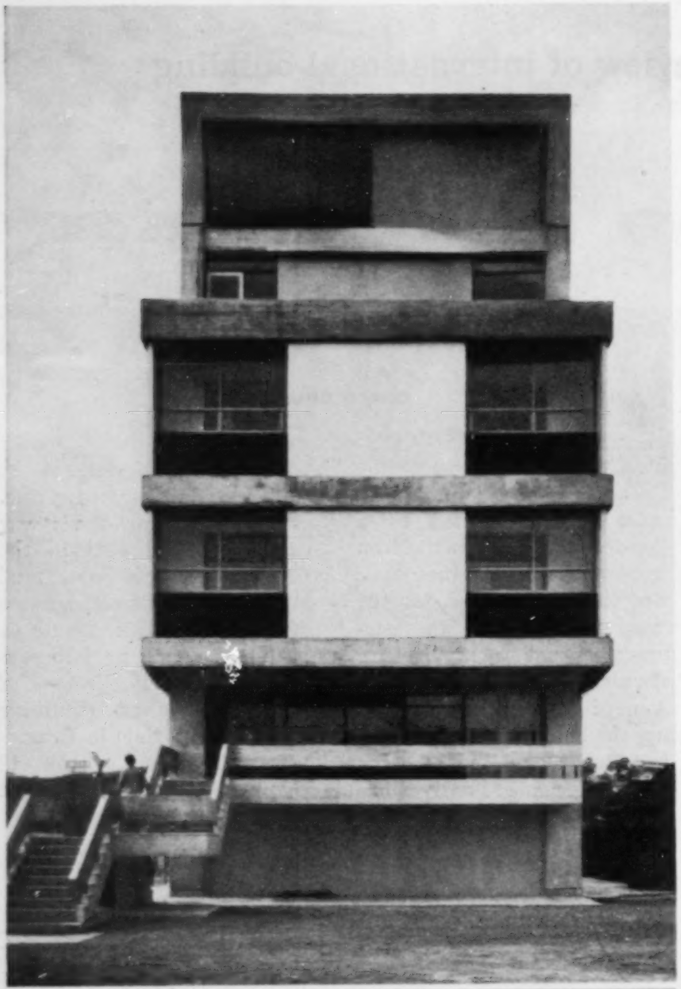


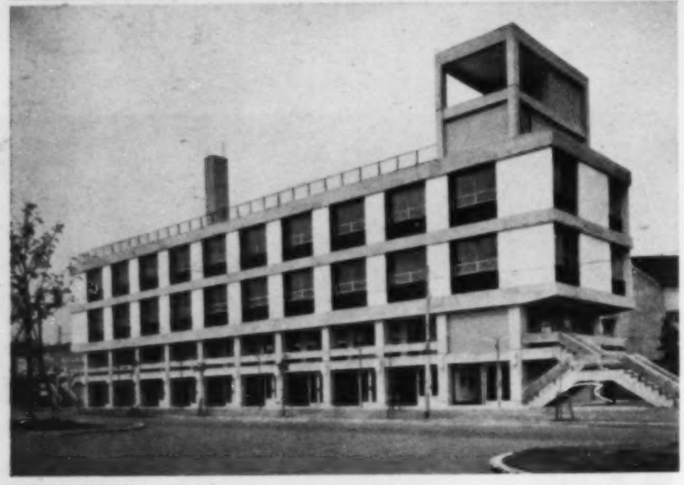
FLORENTINE BANK

The staid Savings Bank of Florence, Italy last month opened a new headquarters building that was anything but staid in appearance. The banking floor (photo, right) has a radical kind of openness that, at first glance, made many Florentines fear for the safety of their deposits. But a second look convinced them that openness had two advantages. The first was greater security, each part of the bank being visible from every other. The second was a freedom of form that allowed the architect to repeat some of the medieval character of neighboring buildings in the main façade (above). Rather than force his building to follow function, Architect Giovanni Michelucci maintains that he designed it "to follow life."

DOMUS







KOKUSAI-KENTIKU

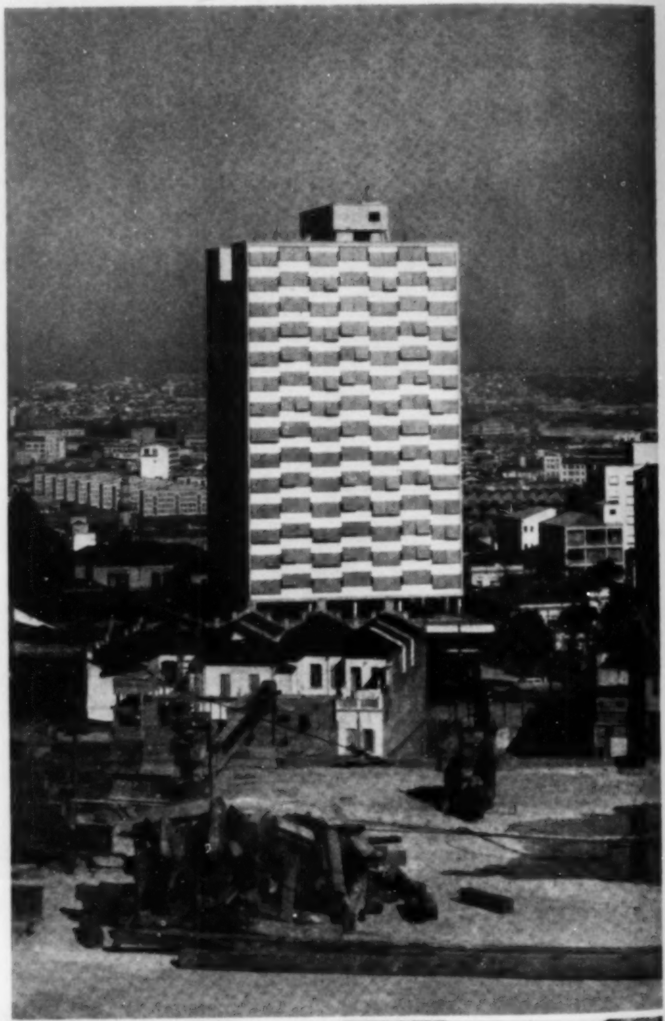
BRUTAL DESIGN IN JAPAN

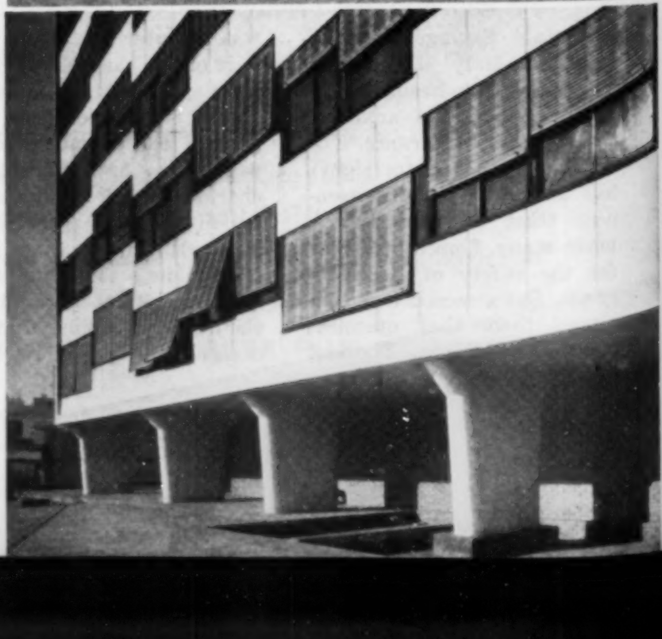
One of the most unfeminine buildings built in Japan since World War II is the Yokohama Ladies Center. Despite the definitely female activities that it houses, e.g., a dressmaking school and a woman's shopping center, the reinforced concrete structure has the brutal look of a man of war. By designing the entrance façade of the building (top photo) to look like a particularly enigmatic Japanese glyph, Architect Yoshinobu Ashihara has not clarified the confusion in Western eyes.

ODD PATTERN IN BRAZIL

It may not be easy to find a reason for varying the usual pattern of windows in a wall, but it can be done. Indeed, sometimes two reasons can be found, as happened when Architects Rino Levi and Roberto Cerqueira Cesar designed this apartment building in São Paulo, Brazil. They set alternate windows at different heights from the floor in order: 1) to make room for bookcases and window seats, and 2) simply to make the façade a lively one to look at. On each floor the three center windows (one high, two low) are split between the living rooms in the two adjoining apartments. The other four mark the bedrooms. High or low, all windows are shielded from Brazil's piercing sunlight by metal blinds which may be rolled up or projected outward like awnings.

L'ARCHITECTURE D'AUJOURD'HUI

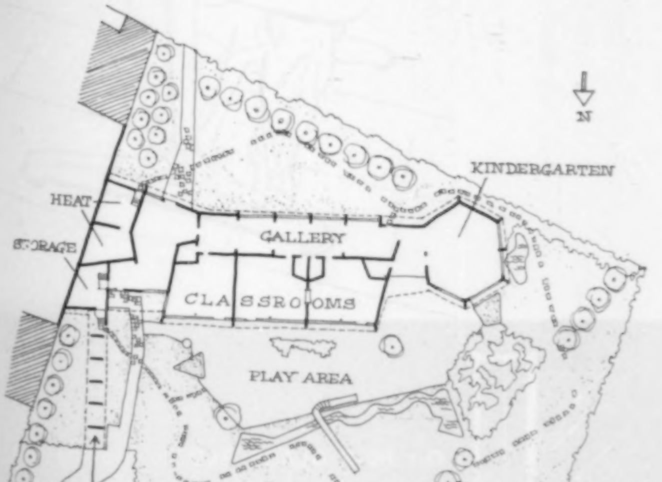




HABITER

APPEALING DISORDER IN BELGIUM

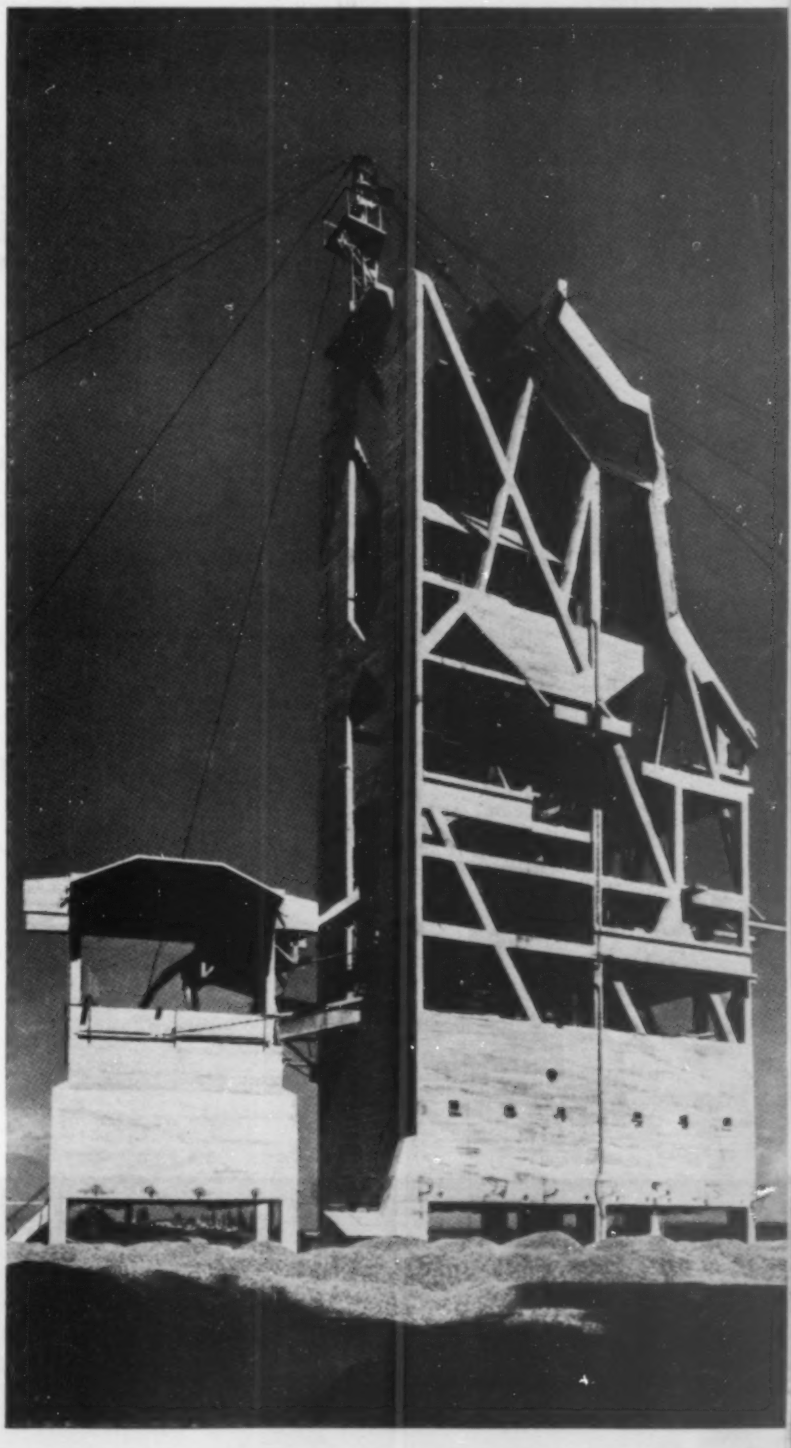
The architecture of permissive education has been slower to take hold in Belgium than in America. But City Planner Jacques Dupuis has introduced many of the infant-sized features of more progressive U. S. schools in his kindergarten near Mons: handrails of both adult and child heights, low sills and seats. He has also tried out a few Gallic innovations: irregular-sized classrooms (see plan, below), odd holes pierced in the walls of a tent-roofed playroom. Because his cyclone-prone site was undermined by coal shafts, Dupuis had to put his roof-supporting, load-bearing walls where he could, and had to fill the gaps with curtain wall techniques. The results (above) may appear somewhat chaotic, but they share with the surrounding gardens a definite, childish appeal.

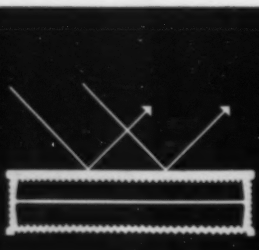


INDUSTRIAL SCULPTURE IN ITALY

Italy is not generally credited with adapting its mechanical facilities to the landscape in the way that has marked recent British and Swiss industrial architecture. But a crushed stone plant near Turin indicates that at least one Italian architect, Giuseppe Raineri, can turn a traditional eyesore into outdoor art. The main plant building (right) combines a cable tower, two hoppers, and a discharge funnel in a form of rare grace and force. END

L'ARCHITETTURA





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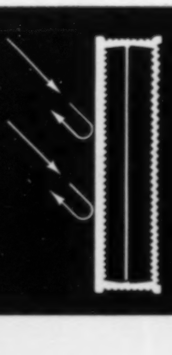

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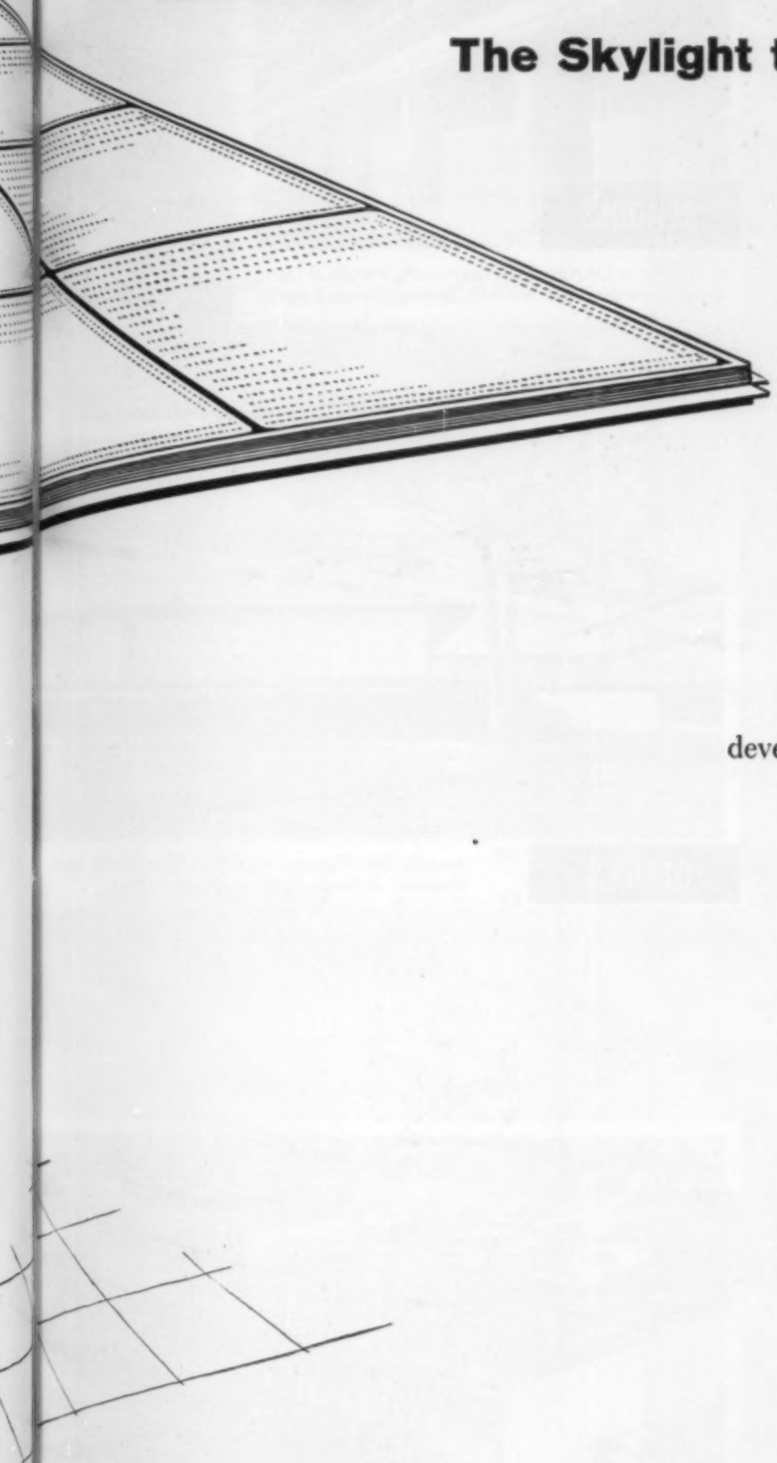

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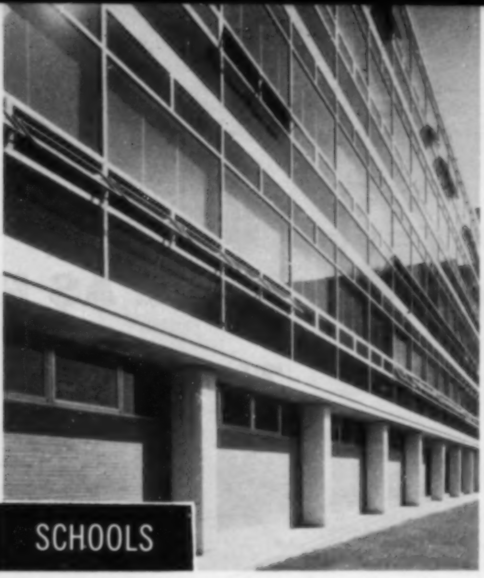

SCHOOLS

K. T. Compton Laboratories, Massachusetts Institute of Technology, Cambridge, Mass. Architects: Skidmore, Owings & Merrill

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Architect: Ernest L. McCoy

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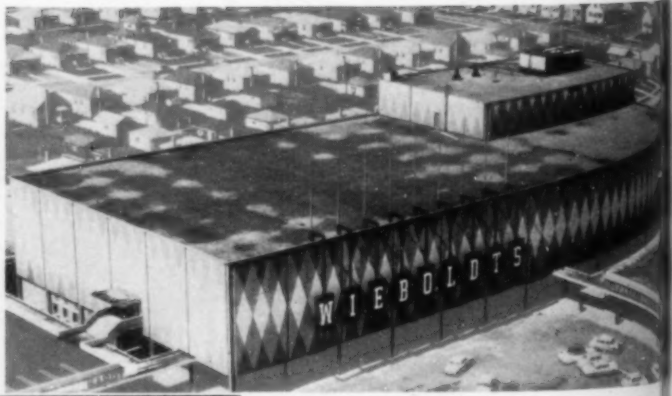

SHOPPING CENTERS

Wieboldt Shopping Center, Chicago, Illinois
Architects: Barancik, Conte, and Associates

St. Mary's Mercy Hall School of Nursing, St. Mary's Memorial Hospital, Knoxville, Tennessee. Architects: Maguolo and Quick; L. P. Cotter, Associate

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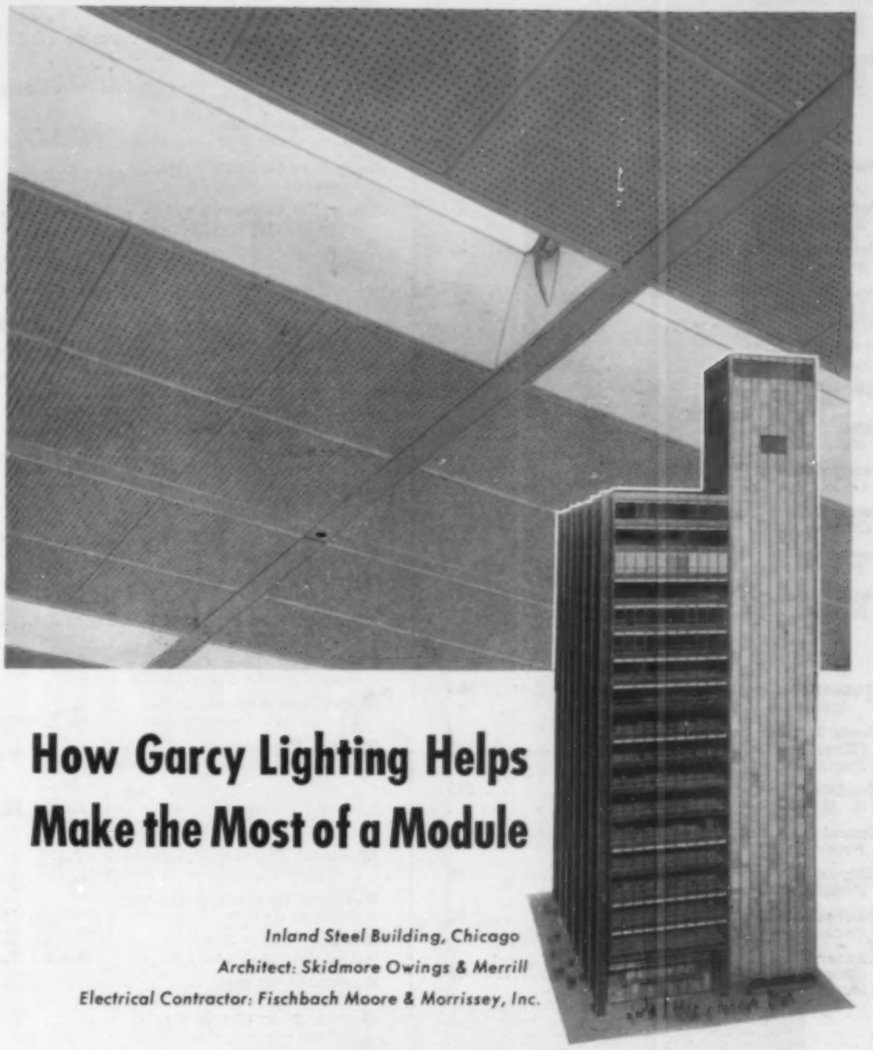

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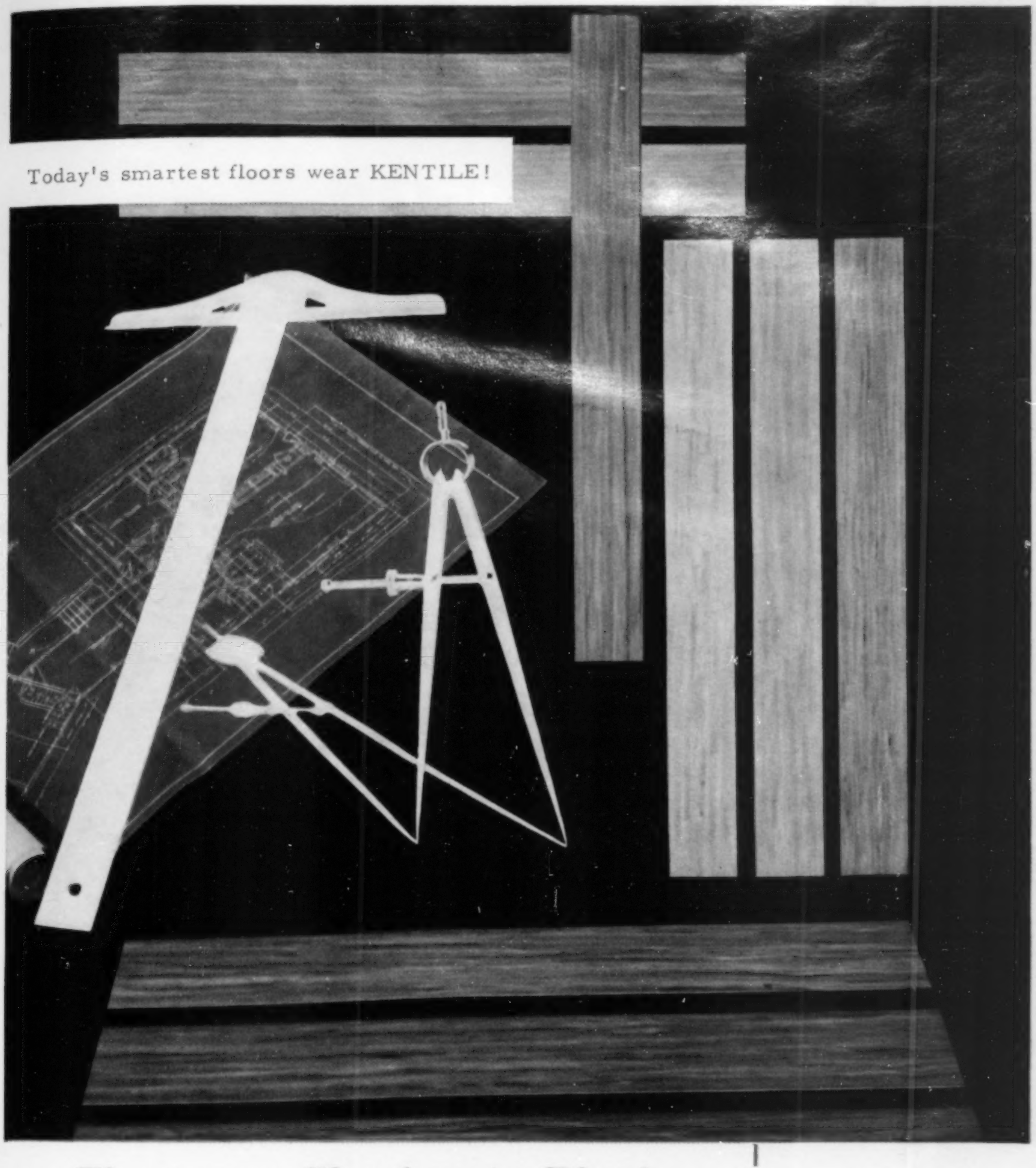

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